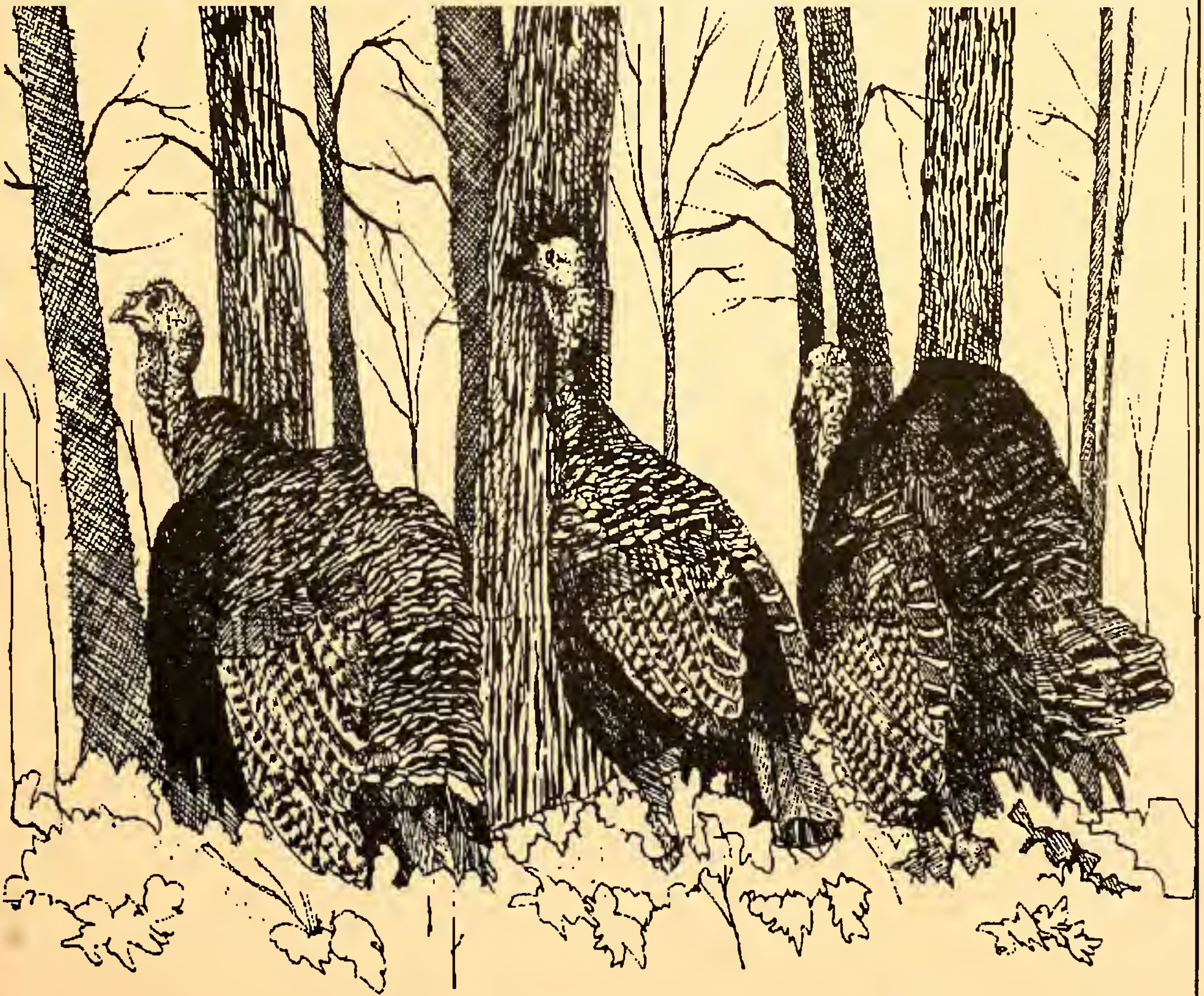
LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES



Annual Report
Fiscal Year 1991-92

Department of Wildlife and Fisheries

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A Message from the Secretary

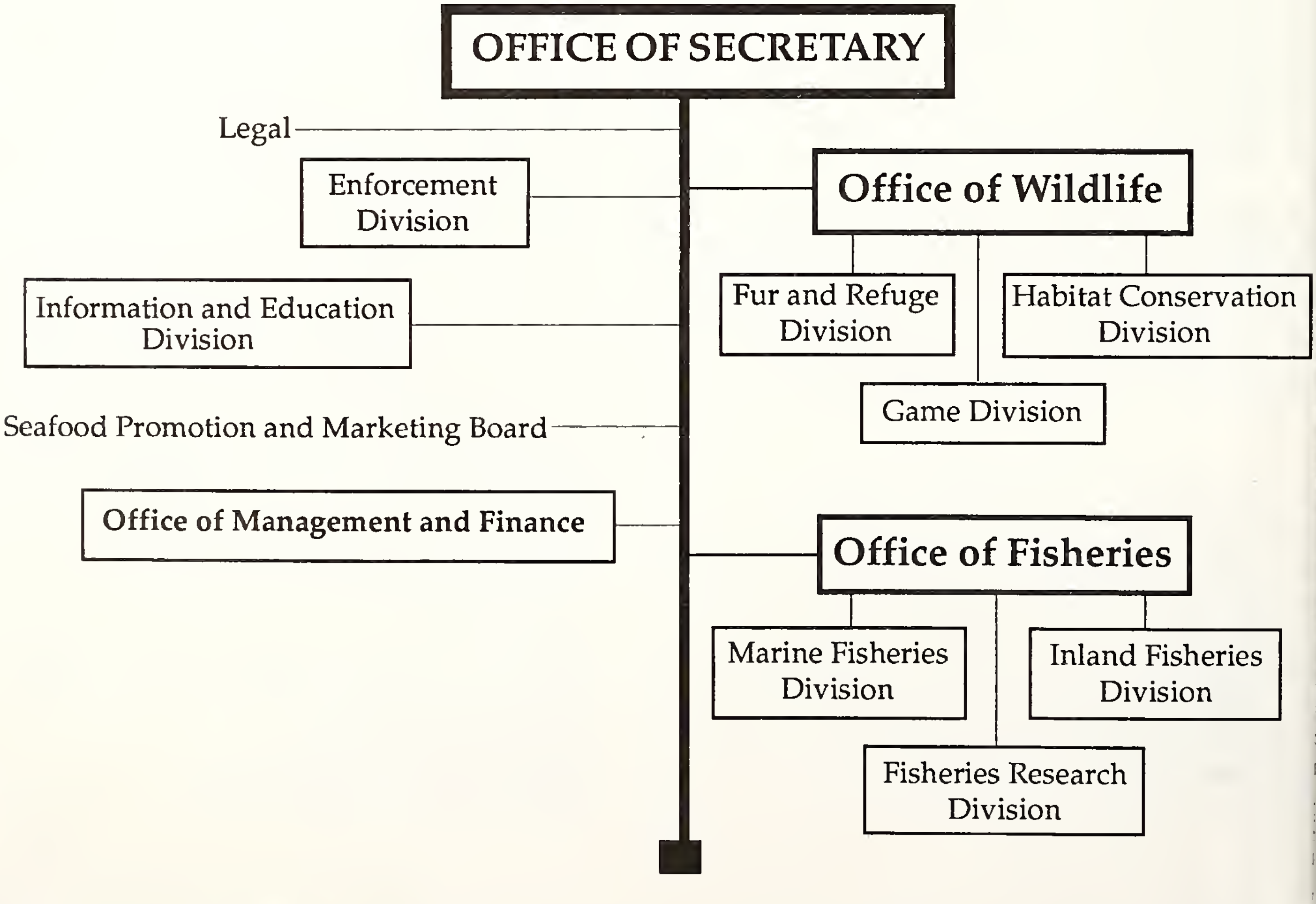
The Department of Wildlife and Fisheries herewith submits its Fiscal Year 1991-92 Annual Report to the Governor and the Legislature of the State of Louisiana.

The report covers the many activities conducted by the department in the fiscal year 1991-92 to enhance, protect, perpetuate and properly harvest our renewable resources.

The importance of these resources to our quality of life and economic well being is incalculable. As chief public advocate and steward, this department serves to ensure that these resources are available for the use and enjoyment of present and future generations.

Joe L. Herring
Secretary

Administrative Structure Chart



OFFICE OF SECRETARY
Legal
Enforcement Division
Information and Education Division
Seafood Promotion and Marketing Board
Office of Management and Finance
Office of Wildlife
Fur and Refuge Division
Habitat Conservation Division
Game Division
Office of Fisheries
Marine Fisheries Division
Inland Fisheries Division
Fisheries Research Division

OFFICE OF SECRETARY

The Office of Secretary is administered by the agency's chief administrative officer. The Secretary oversees all scientific operations of the agency as organized in the Office of Wildlife and the Office of Fisheries. The Secretary also excercises direct supervision over the agency support operations. These include Legal Section, the Enforcement Division, the Information and Education Division, the Seafood Promotion and Marketing Board, and the Office of Management and Finance.

ENFORCEMENT DIVISION

The Enforcement Division is responsible for enforcing laws enacted by the Louisiana Legislature relative to fish and wildlife resources, boating safety regulations and federal regulations pertaining to migratory birds and endangered species.

A major part of this effort is training. Wildlife Enforcement Cadets now receive a minimum of 21 weeks of training in the Wildlife and Fisheries Law Enforcement Academy. During Fiscal Year 91-92, a total of 45 new officers were graduated from the academy. These are considered among the best trained conservation officers in the nation.

Wildlife agents continue to train throughout their career. Most officers now carry an average of eight different certifications and the division offers training in 15 specialized courses.

Field enforcement efforts this year were directed toward all aspects of resource protection with emphasis on deer and waterfowl enforcement. Intensive day and night patrols during deer hunting season resulted in substantial numbers of arrests for possession of illegal deer and hunting deer illegally. The deer decoy was used with great success and resulted in a reduction in night hunting, shooting from public highways, and incidental poaching. Our unmarked units continued to be effective against road hunters and gave agents a better than even chance of apprehending poachers in many situations.

Waterfowl enforcement remains a high priority. The division has instituted a waterfowl enforcement training course. This and other measures have enhanced effectiveness. It is also apparent that public education concerning depleted waterfowl populations and improved hunter compliance have created a much better situation in Louisiana.

The Oyster Strike Force and Salt Water Enforcement Patrol have successfully enforced oyster and saltwater fishing regulations. These units work with the division's pilot-agent and airplane to monitor commercial and recreational fishing activity along Louisiana's coastline.

The Covert Section continues to develop substantial cases involving illegal sale and purchase of game, fish and protected species. Plans are to expand the section whenever new officers complete training and become available.

Members of the Wildlife Enforcement Dive Team have achieved Dive Master Certification and now seek more advanced training. Additional officers will be added to the Dive Team and equipment acquisitions are scheduled.

The Statewide Strike Force has been completely staffed with 18 officers. They are responding to enforcement problems throughout the state and are proving to be a valuable asset to the division.

The Boating Section has been involved in projects including D.W.I. detection, boating accident and theft investigations and boating safety training. The efforts have paid off. In 1991, 31 people were killed in boating accidents in Louisiana. During 1992 the number was reduced to 14 deaths, a 45% decrease. This is a very significant decrease that has attracted nationwide attention. Boating Safety patrols and D.W.I. Teams were instrumental in saving lives and preventing needless accidents on the state's waterways.

The division strives to provide the latest and best equipment for agents. One of the most important equipment purchases occurred this year when Second Chance Body Armor Threat Level II bullet proof vests were acquired for all officers. This added degree of protection has life saving potential.

Agents of the Enforcement Division issued over 23,000 citations during this fiscal year. Additionally, our officers worked with other law enforcement agencies to provide public safety and assistance when needed. The division will continue to train and equip officers to ensure the best protection for Louisiana's natural resources.

INFORMATION & EDUCATION DIVISION

The Information and Education sections of this division work to inform the public of department research programs, to educate a wide range of constituents about state wildlife and fisheries management programs, and to promote safety and ethics among sportsmen.

Information Section

During this reporting period, Information staff were dedicated to three major operations: the News Service, the *Louisiana Conservationist Magazine*, and the *Louisiana Conservationist TV Magazine.*

News Service. During this fiscal year, the Information Section improved the cost efficiency of the news service while doubling its productivity. The service now includes the single weekly mailing of a packet of news items; in addition the service produces a department newsletter. These provide information on regulatory changes, resource management programs and issues which effect the citizens directly.

The service manages two mailing lists which include all news media outlets, outdoor writers, public officials and a multitude of other interested parties. Department news is made available to the general public across the state in a timely manner.

Louisiana Conservationist Magazine. The publication has a 70 year history. In 1989, staff began producing the magazine on a paid circulation basis. This move helped offset the cost of production and distribution of the magazine. As such, it is funded under an ancillary budget attached to the department. Paid subscriptions are up to approximately 50,000.

The full color magazine has traditionally been the primary public relations organ of the department. In addition to five bi-monthly issues, subscribers also receive a sportsman's wall calendar. The popular calendar features entries on season opening dates, fishing tournaments, and noteworthy natural events in every region of the state.

Louisiana Conservationist TV Magazine. The Information Section TV Unit completed production of the third season of half-hour television programs. Louisiana Public Broadcasting aired the programs weekly until June of 1992. Unfortunately, severe budget restriction compelled the suspension of production of this increasingly popular program.

VHS copies of programs are available through the department library. Also, schools and libraries may check the television programs out from the central State Library.

Education Section

Hunter Education. The Hunter Education Unit successfully completed its seventeenth year as a major education program. The program has been mandated by state law since 1985 and is a federally funded P-R project.

Certification of students in Hunter Education reached a new high with 627 ten-hour courses conducted resulting in 20,200 students receiving life time certification. Seventeen courses for volunteer instructors were conducted resulting in 200 new volunteers teaching the course. Totals to date are 225,000 students graduated and 3,200 volunteers trained with 1,000 volunteers remaining on the active rolls.

Range construction projects were an important part of H. E. activities for this reporting year. The public range at Natchitoches was completed and offers shotgun, archery, pistol and air rifle shooting opportunities.

A 100 yard big bore rifle range was constructed at Woodworth in conjunction with the planning of an environmental education center scheduled to be completed in 1993.

Advanced instructor training included a statewide workshop held at Camp Grant Walker. One hundred and fifty volunteers participated in the two day training session including instructions on teaching shotgun, muzzleloading, archery, orienteering and wildlife identification.

Advanced training also included five bowhunter instructor courses and five muzzleloader instructor courses.

The bowhunter education course for students was offered in 13 courses through the National Field Archers Association. Two hundred and sixty bowhunter education students were certified through the basic eight-hour course.

Advanced student curriculum included a statewide education training session including bowhunting, muzzleloading, shotgun, wildlife ID, orienteering and wildlife management. A junior and senior team were selected to compete in the NRA national competition at Raton, New Mexico. The junior team placed first in the nation and the senior team placed second.

Boating Education. During the 1991-92 fiscal year Boating Education purchased a radio-controlled model boat and used it for educational programs at displays and children's programs.

The Boating Education Coordinator attended a national Boating Education Seminar in Annapolis, Maryland to discuss program development ideas. The following clinics and programs were completed: 28 safety programs for industry and company groups; six school programs; four courses for volunteer instructors; seven information and display exhibits; eight certification courses. A total of 196 students and 103 volunteer instructors were certified.

Project WILD. Project WILD is a vigorous, growing program. Teachers and youth leaders are requesting WILD workshops and using the activities. Comments on the workshop surveys indicate a need for more information and materials. The activities are a convenient means to incorporate Louisiana Department of Wildlife and Fisheries management policies into an educational format. Teachers are a ready network to distribute this information.

During this fiscal year, Project WILD successfully completed the following: 65 WILD workshops (31 basic, 26 combined, eight aquatic) with 1,330 participants enrolled; three Advanced WILD workshops (freshwater fish; furbearers, alligators, and marshes; wildlife management) training fifty nine participants and meeting the year's goal of three workshops; two Facilitator Workshops training 46 people and exceeding the year's goal of one workshop and 25 people; published and mailed three newsletters.

Aquatic Education. This reporting period reflects accomplishments of the Aquatic Education Program now completing its fourth successful year.

The Aquatic Education Program is designed to acquaint youngsters and adults with the sport of fishing and Louisiana's aquatic environment. The following is a list of activities the aquatic program assisted with or sponsored.

Fishing Clinics. Youth fishing clinics were conducted at various locations around the state. These clinics were sponsored by youth, civic, sportsmen, and church groups. Over 4,500 youngsters attended 60 fishing clinics. They were trained in casting, fish identification, knot tying, and boating safety.

In addition to general clinics, Aquatic Education also co-sponsored the Association of Louisiana Bass Club's youth fishing tournament.

School Programs. The environmental science program -- WILD Louisiana -- continued to grow. Eighty-five new schools have included the outdoor science program into teaching schedules. WILD Louisiana is a program developed by LSU Sea Grant. It addresses the problems surrounding our wetlands and explores red drum (red fish) management issues.

Also, thirty-six elementary and middle schools conducted aquatic education classes for their students. In Beauregard, Acadia, and East Baton Rouge Parish school systems, 14 clinics for the adaptive P.E. classes introduced a total of 538 students to the sport of fishing.

Advanced Workshops. Two advanced workshops were co-sponsored by Aquatic WILD. These workshops were conducted at Rockefeller Refuge and Alexandria State Forest. Through these workshops educators were introduced to practical management techniques currently implemented in the state's fisheries and wetland resources.

OFFICE OF MANAGEMENT AND FINANCE

The Office of Management and Finance oversees financial and management operations of the department and acts to provide general administrative services to all units within Wildlife and Fisheries. The Undersecretary directs and is responsible for functions of the Office of Management and Finance. This person is responsible for accounting and budget control, procurement and contract management, data processing, management and program analysis, personnel management, and grants management for the department and all of its offices.

Fiscal Section

The Fiscal Section handles all financial matters for the department. It has primary responsibility to see that all such activities and procedures are handled in compliance with standard accounting practices and in accordance with all laws and regulations. The section is composed of the following units: budget, accounts payable, auditing, payroll, sports and commercial licensing, and boat registration.

The fiscal staff works with the undersecretary in planning and analysis functions for the entire department, particularly in areas of expenditure control and revenue collection.

In fiscal year 1991-92, the department had an annual budget of $37,117,562.

The actual expenditures were totaled at $34,566,708 and spent in the following categories.

$ 22,755,647	personnel services
7,144,906	operating expenses
363,176	professional services
1,840,433	other charges
472,336	interagency transfers
1,990,210	acquisitions & repairs

Also during this fiscal year, the department recorded revenues to funds and trusts. The fiscal staff must manage these funds in accordance with legal regulations under which they were established.

Fiscal recorded the following gains to the Conservation Fund from the sources listed.

$ 3,767,675	royalties oil/gas
1,376,888	royalties other
785,499	rentals on land
66,922	other income on land
133,190	interest income
118,154	severance taxes
16,866,524	license sales
575,539	miscellaneous income
(324,631)	adjustment to revenue
$ 23,363,760	Total

In addition, department revenues to other funds were as follows:

$ 1,745,769	Rockefeller Refuge Fund
1,589,685	Rockefeller Trust Fund
383,967	Marsh Island Operating Fund
433,920	Russell Sage/Marsh Island Trust
40,444	Russell Sage Fund #2
204,211	Russell Sage Capital Improvement Fund
392,865	Seafood Promotion & Marketing Fund
82,256	LA Fur & Alligator Public Education
580,329	LA Duck Stamp Fund
726,611	Wildlife Habitat Natural Heritage Trust
666,206	LA Alligator Resource Fund
97,659	Lifetime License Endowment Trust Fund
973,427	Artificial Reef Development Trust Fund
6,662,008	Federal Financial Assistance

Personnel Section

The personnel office provides assistance to active employees, retirees, former employees and surviving spouses of deceased employees. Personnel staff provide guidance relative to personnel matters, such as salaries, insurance, retirement, and workers' compensation. They also field inquiries from potential applicants regarding employment opportunities.

On February 3, 1992, the Wildlife Enforcement Senior Agent reallocations went into effect. In addition, the GS level for Wildlife Enforcement Sergeant was raised from 15 to 16.

The department's Affirmative Action Plan for 1992-93 was completed and became effective May 1, 1992. During 1992 this department established an Equal Employment Opportunity Coordinator position. The incumbent will be responsible for prevention and elimination of employment practices and policies inconsistent with the department's Affirmative Action Plan.

Department personnel set up a task force and began meeting with the Department of Civil Service to establish generic classes for biologists and specialists.

The Computer Center has begun meeting with the Personnel Section to create and establish a program to automate personnel records and procedures.

The Personnel Section is currently involved in a legal action filed by members of the Association of Federal, State, and Municipal Employees (AFSME) relative to payment of Compensatory Time.

In April, 1992, open enrollment was held enabling employees to transfer hospitalization to a health maintenance organization or to Group Benefits. Assistance was given providing information on available types of health insurance and completion of necessary forms.

In addition, April was open enrollment for employees to cancel or revise current benefits covered under the Tax-Free Flexible Benefits Plan (Cafeteria Plan).

Computer Section

The Computer Section oversees the department's computer resources: a central computer system which drives local and remote networks for department offices throughout the state. Department employees connect to this system via a combination of terminals and personal computers, which give them access to a wide variety of information processing capabilities.

Computer staff provide support to department personnel: they handle regular inquiries on computer hardware and software and provide updates of various department databases. In addition, the section provides statistical analyses and personal productivity tools statewide.

Over the past year, department needs have expanded at a rapid pace. The section has met these needs on a fixed budget by utilizing new and less expensive technology.

Administrative Services Section

The Administrative Services Section consists of four units: Purchasing, Communications (two-way radio network), General Services, and Building and Grounds.

Purchasing. The Purchasing Unit serves as the centralized entity within the department to ensure compliance with state laws, rules and regulations concerning procurement. The following is a summary of purchase orders issued for 1991-92. Purchase orders issued through state purchasing: 195; department purchase orders: 86; department release orders: 1,689; department small purchases: 1,921. An additional 22 leases have been maintained, initiated and updated.

The Purchasing Unit worked closely with and supported other sections and divisions in their endeavors: National Hunting and Fishing Day, vehicle maintenance contracts, seafood promotions, alligator harvests, timber sales, farm leases and managed deer hunts.

Communications. The two-way radio network consists of maintenance, repair and upgrade of 31 towers, 1,135 mobile radios, and 411 portable radios. Also, 47 marine radios are installed in vehicles, boats, and aircraft, and at wildlife management areas, refuges, district offices, regional headquarters and additional remote locations.

Microwave transmission from French Settlement to Bridge City to Houma is now on line via Department of Transportation. This reporting period the number and cost of repairs to both towers and radios have increased, while the purchase of new equipment has decreased. The department and other state agencies are currently being evaluated for the possibility of establishing a shared communication system. The Communications Unit is participating on a statewide maintenance consolidation task force.

General Services. General Services consists of the mailroom, printing services and department office supply control. The mailroom processed over 400,000 pieces of mail (excluding inter-department mail) and completed improvements to the shipping and receiving area. The print shop filled over 400 orders. This included over 2 million duplications. The department supply room utilized a new computerized system to make routine jobs more efficient and cost effective. The supply staff issues office supplies to all district offices, region headquarters and various remote facilities.

Building and Grounds. This unit is responsible for upkeep of the Baton Rouge complex which consists of over 200,000 square feet under roof. This includes housekeeping, maintenance and repairs. The department headquarters is located on 17.7 acres. This unit handles improvements to the lawn, flower beds, parking lots and storage areas on the tract of property.

Office of Wildlife

The Office of Wildlife is supervised by an Assistant Secretary who reports directly to the agency Secretary. The Assistant Secretary oversees the operation of three divisions: Fur and Refuge, Game, and Habitat Conservation.

FUR AND REFUGE DIVISION

The Fur and Refuge Division was established concurrently with the institution of the Department of Wildlife and Fisheries in accord with terms of a constitutional amendment in the 1944 General Election. The amendment divided the then-existing Department of Conservation into three independent state agencies, one of which was the Department of Wildlife and Fisheries.

Louisiana was among the first states to initiate a refuge system of management with the creation of State Wildlife Refuge in 1911. Marsh Island and Rockefeller refuges soon followed. Protection, the only management tool in the early years, today is incorporated with research and development.

Fortunately, the historic sanctuary concept, whereby areas were set aside for only wildlife protection, did not prevail in Louisiana. Early on, technicians realized coastal marshlands were in trouble. Pioneer biologists identified marsh degradation problems: on Rockefeller alone, an estimated 185 acres per year of marsh break-up was documented for a period after 1930.

Alteration of natural hydrologic regimes affecting Rockefeller -- the Gulf Intercoastal Waterway north of the refuge, the access canal construction on and adjacent to the Refuge, the construction of Highway 82 -- were major influences. Similar marsh losses have since occurred on all coastal marshlands.

In the mid-1950's active marsh management began and has been continually refined by the Fur and Refuge Division. Today, the Fur and Refuge Division owns and is directly responsible for 12.5% of coastal Louisiana. Adjoining landowners depend heavily upon the expertise of the division in the management of their properties.

The estuarine system of coastal Louisiana encompasses over 4,500,000 acres of the most productive wildlife and fisheries habitat in the world and in excess of 90% of the fisheries inhabiting the Gulf of Mexico depends upon this system for survival. The division has actively been engaged in maintenance and restoration of coastal Louisiana for over four decades. Coastal landowners have observed and copied successful demonstration projects. Coastal environment has become a household concern nationwide.

The four major sections of the Fur and Refuge Division are: Land Managment Section, Research Section, Fur Research and Management Section, Resource Management Section.

Land Management Section

Management practices employed on coastal refuges and wildlife management areas are primarily directed toward improving wetlands for resident and migratory waterfowl. The multiple-use management concept is used wherever feasible, so that many other aquatic based animals, including furbearers, fish, game and nongame birds also benefit.

Public demand for recreational use of refuges and wildlife management areas continues to increase. Sport fishing, crabbing, hunting (WMA's) and nature study are popular activities on refuges and wildlife management areas. Commercial wildlife species are harvested on many Fur and Refuge Division properties.

An extensive law enforcement program is carried out on all managed property. A radar surveillance tower was put into service at State Wildlife Refuge in May, 1992 and two enforcement observation towers were refurbished at Rockefeller Refuge.

Mineral activities on all areas are closely monitored. Each activity is individually reviewed and must comply with the department's mineral regulations, Deeds of Donation and various agreement letters.

Rockefeller Refuge. Since 1920, coastal wetlands of southwest Cameron Parish and southeast Vermilion Parish, known as Rockefeller Wildlife Refuge, have been used by the Fur and Refuge Division to study and demonstrate management. Today, isohaline lines, or areas of salinity, resemble those of the late 1940's due to successful management.

Unfortunately, thousands of acres of coastal Louisiana have not experienced success. On Rockefeller Refuge, structural management is used along with marsh burning, furbearer trapping (where practical), water level control, and salinity control. Major thrusts are directed toward wetland maintenance and restoration for resident and migratory waterfowl.

The technical staff at Rockefeller has over 100 years of combined experience in environmental monitoring and management. Multiple-use management has been developed and used whenever feasible, so other aquatic-based animals, including furbearers, fish, and resident game and non-game birds also benefit. Management phases include an ongoing maintenance support program involving levee repairs, structure maintenance, and visual monitoring of ecological conditions. Permanent data collection stations (vegetation, water level, salinity and fish) are monitored on a scheduled basis.

Tampering with structures by sport fishermen is becoming a serious problem, sometimes permitting extreme salt tides to inundate study areas and setting the study back months in terms of laborious structure manipulations and data collection. Heretofore, the department utilized a small aircraft to monitor the 84,000 acre marsh. Daily observations revealed if problems existed. Corrective action was taken within a few hours.

Beach erosion continues to be a threat to the refuge. An average of 36 feet per year were lost between 1971 and 1979 at measuring stations. The worst year was 1985 when Rockefeller lost 55 linear feet at a sample station. Overall, between 1971 and 1988, Rockefeller experienced an average loss of 40 linear feet of beach to the gulf. In 1991-92, 48 feet of beach retreat was measured at the Price Lake station.

Approximately 25% of Rockefeller Refuge properties are carefully control-burned each year. The benefits of burning are: to reduce rough and undesirable vegetation and to promote the growth of succulent and tender grasses; to set back natural succession; to promote the growth of more desirable grass species; to lessen severity and incidence of lightning caused summer/fall wildfires.

A considerable amount of personnel and equipment time was invested in manipulating water control structures to achieve water level and salinity management objectives on wetland management units. The primary objective is to produce desirable vegetation depending upon production capability of each management unit. The vegetation becomes the base for marsh enhancement and enhancement of fisheries and wildlife populations.

Environmental monitoring with structural manipulation to produce fisheries crops, invertebrates, vegetation and wildlife in selected areas resulted in an effective program which gained popularity with fishermen.

During fiscal year 1991-92, several marsh enhancement projects were planned and completed, bringing under management over 100,000 acres of Rockefeller Refuge and surrounding Mermentau Basin. These included: complete refurbishment of the Rockefeller East End Water Locks; construction of a freshwater introduction structure for the 5,000 acre Lake 5; construction of the Lake 5 water control structure; plugging of the old Lake 5 structure; shaping and capping of Lake 5 levee in vicinity of Deep Lake.

Agenda of projects to commence in 1992-93 include the following: a nature trail to provide public information and awareness; management of abandoned access canals in Unit 6; levee restoration of Units 4 and 5; refurbishment of pumping units on Rockefeller impoundments. Also, Price Lake Road, which serves as a major access and a salt water barrier, will be upgraded and maintained.

Marsh management/marsh enhancement extension activities are conducted on a routine basis by biological staff of the Fur and Refuge Division to provide technical expertise to landowners regarding marsh management projects. Major southwest Louisiana projects involving Fur and Refuge personnel include: Miami Corporation Welfare Bridge Project, Miami Corporation Guillotine Gate Structure and Gold King Canal Plug, Vermilion Corporation Freshwater Introduction Structure, Vermilion Corporation West Marsh Management Unit Development, Cameron-Creole Watershed, Coastal Wetlands Construction and Restoration Plan and Cameron Parish Hog Bayou Plan.

Rockefeller Refuge personnel have been involved in the permitting process with the Hog Bayou Restoration Project for six years, a cooperative effort with Cameron Parish and private landowners. Field study was begun in 1991, even though the project is still under the permit review process. The first year's study of the proposed Hog

Bayou Marsh Restoration Project was designed to conduct baseline vegetation surveys prior to any type of project development. The purpose of the project is to evaluate vegetative composition with emphasis on detecting future vegetation changes for Hog Bayou Marsh Restoration Project #1.

Three aspects of the vegetation study were accomplished in 1991: line transect vegetation measurements (estimated) recorded for 189 stations; emergent vegetation measurements recorded for 50 one-square foot 'clip' samples taken from permanently marked sites throughout the 2,000 acre project area; aquatic vegetation measurements recorded for 40 one-square foot 'clip' samples taken from permanently marked sites throughout the 2,000 acre project area. Four soil samples were collected in late November, 1991 at the same site sampled in 1986. The LSU Soil Test Lab tested the samples for soluble salts plus a routine soil analysis.

Marsh Island Refuge. Marsh Island Wildlife Refuge is located in the center of Louisiana's gulf coastal marshes. The island is comprised of primarily brackish marshes vegetated predominantly by wiregrass (*Spartina patens*), three-cornered grass (*Scirpus olneyi*), black rush (*Juncus* roemerianus), hog cane (*Spartina cynosuroides*), saltgrass (*Distichlis spicata*), leafy three-square (*Scirpus robustus*) and feather grass (*Panicum virgatum*). Marsh Island supports a wealth of resident wildlife species and provides wintering habitat for thousands of migratory waterfowl, geese and shorebirds.

Management of Marsh Island as a wildlife refuge is a formidable task for the Department. In addition to marsh management activities, maintenance of the headquarter facilities and associated equipment, boats and motors, impoundments, water control structures, and many fixed crest weirs provide ample work for the entire staff.

An 18-foot Boston Whaler Sentry and a 200 HP Yamaha outboard motor were purchased for enforcement activities on Marsh Island and surrounding water bodies. Radios have been installed for communications, and a LORAN unit for navigation. Small engines and various equipment were purchased to facilitate job assignments. A computer system was purchased to enable data storage and analysis for alligator and waterfowl research and summarization of environmental data.

Major repairs were conducted on boats, equipment and the headquarters. The *M.O. Sage* was sandblasted and painted, the propeller shafts changed and routine and preventive maintenance were conducted on the engines. The entire exterior of the headquarter facility and boat sheds were washed and painted. Selected rooms in the headquarters were painted. Boundary signs were maintained and replaced as needed. Entrance points were posted with new refuge regulation signs.

In cooperation with the Iberia Parish Sheriff's Department, the department continued its prisoner work release program on Marsh Island during 1991-92. A small number of prisoners was utilized to assist Marsh Island staff with upkeep of the headquarters facility. Supervision was enforced by department personnel. Tasks performed included cleaning, painting, and mowing. This program benefitted the department and the sheriff's office which works to prepare prisoners for return to a productive lifestyle.

Environmental monitoring on Marsh Island includes determining bi-monthly water salinities (40 sites), water levels (12 gauges) and daily temperature and rainfall amounts. A constant tide recorder registers water levels within a weired management unit on Marsh Island. This recorder provides data on effect of a fixed crest weir on marsh water levels. Water level and salinity from 1986 through 1992 has been entered for computer analysis. Analysis will allow us to streamline data collection points, intensify data collection at selected sites and aid in evaluation of marsh management techniques.

During the fall of 1991, approximately six miles of interior marsh ditches were dug to facilitate water management in the east and west impoundments. This dramatically increased management capabilities in 1992. During the spring of 1992, both units were dewatered. Due to this management scheme more annual grasses were produced this year as compared to any previous year. These annual grasses will produce a wealth of waterfowl foods for wintering puddle ducks. Interior ponds in the impoundment were providing food and cover for resident mottled ducks in June 1992.

Value of present marsh management techniques remains controversial and is being questioned. These management techniques (water control structures, burning, etc.) have been implemented in the past and are presently used on many refuges in Louisiana, including Marsh Island Wildlife Refuge.

The continual effort to improve Marsh Island includes promoting growth of desirable vegetation necessary to support ducks and geese while benefiting other wildlife and fisheries species. This has been and is accomplished by the use of water control structures and burning.

Burning marsh in late fall and winter is necessary to prevent plant succession in brackish marsh. If not burned, brackish marsh will be dominated by wiregrass, a plant with limited wildlife value. Burning allows grasses to germinate, and gives three-cornered grass an early start during the growing season. Three-cornered grass is a prime food for many wildlife species such as snow geese and muskrat. Emphasis is placed on burning beginning in September and ending in early January. Fall burning provides the most benefit to three-cornered grass. Burns are documented by date and mapped for future use. Forty to fifty percent of Marsh Island was burned in 1991-92.

Habitat enhancement for shorebirds and wading birds is an integral part of management activities. In February and March, 1991 a shorebird nesting island was developed in Bayou Platte. This project involved placing sand and shell on a 3/4 acre island to provide a site for shorebirds (gulls, tern, skimmers, etc.) nesting. The project was funded by Nerco Oil and Gas Inc. at a cost of $60,000. Utilization of this island was immediate including nesting activity by black skimmers and feeding and nesting by various avian species. An observation platform was constructed and a dedication held on July 19, 1991.

Planning, permitting and construction of three wading bird rookery platforms on the east end of Marsh Island were completed in 1991-92. Although these sites have not yet been utilized, we are hopeful they will be used in future years.

Various studies are being conducted to: (1) determine distribution and abundance of wintering waterfowl on Marsh Island; (2) relate abundance and distribution of waterfowl to management units (weired, unweired or impounded marsh), marsh burning and vegetation types; (3) document mottled duck movement, habitat use, etc. (summer banding program); (4) document density of brackish marsh vegetation, soil drainage, etc. (joint project with LSU Center for Wetland Resources); (5) monitor soil salinity in the impoundment; (6) conduct Marsh Island experimental alligator research and harvest program (see Fur Research and Management Section); (7) conduct the alligator hatchling and farm release alligator project to determine growth movement and survival; (8) document spring migration of passerines on the Gulf Coast of Marsh Island.

In addition, personnel from Marsh Island were involved with inspection of alligator hides for shipment, monitoring of deer check stations on Salvador Wildlife Management Area, survey of Piping Plovers, collection of furbearers for relocation, of wildlife and habitat photography, preparation and presentations of slide shows, attendance at science fairs, checks and collections of alligator eggs, and surveys of muskrat houses.

All refuge rules and regulations and those regulations pertaining to Vermilion and Cote Blanche Bay and near offshore waters were enforced by refuge personnel. Specific cases include illegal use of crab traps and gill nets, shrimping out-of-season, harvesting undersize crabs, over-the-limit on cast netting for shrimp, and illegal oyster harvesting. Enforcement personnel provided assistance to the Iberia Parish Sheriff Department and the U.S. Customs when requested. Marsh Island personnel provide assistance to stranded boaters an average of two times per week during the entire year.

Approximately 36,000 days of recreation were spent fishing, crabbing, sightseeing and cast netting for shrimp during 1991-92.

State Wildlife Refuge. This refuge contains 13,000 acres of brackish marsh habitat located on the western shore of Vermilion Bay. Management of this refuge is directed toward providing wintering habitat for ducks and geese. State Wildlife annually winters in excess of 100,000 snow geese and thousands of ducks.

During 1991-92 routine maintenance was conducted on refuge headquarters facilities, the trapping camps (Hog Bayou) and the southwest corner, the grounds and all assigned equipment. The outside of the headquarters, boatshed and shop and all other associated buildings were sanded, washed and painted. A metal roof was installed on the headquarters facility. Existing roofs on the other buildings were cleaned, sanded and painted. Preventive maintenance was performed on boats, motors and water control structures. During the spring and summer, months the entire boundary of the refuge was reposted to maintain control of the refuge.

Marsh management practices utilized during 1991-92 included annual marsh burning to promote three-corner grass production and general maintenance to existing water control structures. Approximately 85% of the refuge was burned during the winter of 1991-92. Areas on Indian Point, Redfish Point and south of Prien Bayou continued to recover from muskrat and goose damage that occurred during 1987 and 1988. Muskrat and nutria populations were considered low during 1991. Due to low populations and extremely poor pelt prices, no trapping occurred on State Wildlife Refuge during the 1991-92 season.

During 1991-92 substantial recreational usage of State Wildlife Refuge occurred for both sport fishing and sport shrimping. Approximately 20,000 days of recreation were spent on this area. Recreational activities included fishing, crabbing, sightseeing, bird watching and cast netting. This refuge represents the area most commonly fished in Vermilion Parish east of the Deepwater Channel. Sportsmen utilizing State Wildlife constantly visit the headquarters to obtain rules and regulations pertaining to sport hunting and fishing and commercial fishing.

The refuge headquarters was utilized by the department to host various meetings. The combination of the headquarters facility, the new trapping camp and the USL facility make this location an excellent site for meetings and seminars.

The facilities at the State Wildlife Refuge were used routinely for educational purposes in 1991-92. The Cooperative Extension Service used the refuge in conjunction with its youth 4-H Program. The Vermilion Parish School Board also used the facilities to provide parish honor students with an opportunity to learn about the refuge and marsh management. Talks were given by refuge personnel. A group of 80 Belgium residents, in Louisiana on an economic development mission, visited the refuge. In order to provide the Lafayette District's Federal Magistrates and Prosecutors a better perspective of wildlife law enforcement, an overnight field trip to the refuge was conducted during Spring 1992. These educational uses of the refuge and its facilities provide a unique opportunity to the department to acquaint various groups with the importance of State Wildlife Refuge.

Substantial time was spent enforcing rules and regulations. Fur and Refuge Division personnel provided invaluable assistance to local enforcement agents in patrolling and enforcing commercial fishing and shrimping laws. The patrol boat was used extensively to assist Enforcement Division personnel in patrolling Vermilion Bay and near offshore waters. Special emphasis was placed on enforcing shrimp and oyster rules and regulations and refuge personnel provided lodging and law enforcement assistance to accomplish this mission. The patrol boat was frequently used to assist the Vermilion Parish Sheriff's Department in search and rescue operations. Large numbers of sport and commercial fishermen were provided assistance when they experienced equipment failure. Several special operations were conducted in cooperation with U.S. Customs Blue Lightning Task Force in patrolling Vermilion Bay and nearby waters.

Terrebonne Barrier Island Refuge. Following serveral months of negotiation between the Fur and Refuge Division and Louisiana Land and Exploration Company, three barrier islands in the Isle Dernieres Chain were transferred to Fur and Refuge Division through a 25-year free lease. LL&E hosted a dedication ceremony designating the new sanctuary as the Terrebonne Barrier Island Refuge. These islands include Wine Island, Whiskey and Raccoon Island and are located across the shoreline of Terrebonne Parish.

Wine Island is located on the eastern tip of the chain and was successfully reestablished in 1991 through the efforts of the Louisiana Department of Natural Resources, the U.S. Army Corps of Engineers and Terrebonne Parish. The island was rebuilt using spoil material pumped from the Houma Navigation Channel and protected with a rock retaining wall.

Surveys conducted over the past five years indicate that Raccoon Island is one of the most important waterbird nesting sites on the coast. This island has the greatest species diversity of nesting waterbirds of any barrier island in the state. It also represents the largest nesting colony of waterbirds in the state and has the second largest brown pelican nesting colony on the coast.

Atchafalaya Delta Wildlife Management Area. The Atchafalaya Delta Wildlife Management Area consists of approximately 137,000 acres of shallow water bays and marshes. Nearly 13,500 acres of emerging delta have been colonized by vegetative communities. Extensive areas just beneath the water's surface are exposed during periods of low tide and will become vegetated in the near future.

In order to facilitate operating such an extensive WMA, maintenance of facilities and associated equipment is of major importance. In addition to washing the headquarters building, routine daily maintenance was conducted on the headquarters, generator buildings, Wax Lake patrol camp and storage area. Preventive maintenance was performed on all boats and motors.Other projects completed included repairing the camp porch, installation of a water softener and bulkhead repairs. Routine maintenance was performed to camping areas at Main Delta and Wax Lake Outlet. This maintenance included land leveling, grass cutting and construction of tables and mooring sites. Camping areas are used frequently during waterfowl and rabbit seasons and are receiving increased utilization from commercial fishermen.

Recreational opportunities abound for the public on Atchafalaya Delta Wildlife Management Area. Activities include waterfowl and rabbit hunting, sport fishing, camping and bird watching. Nearly 23,000 days of recreational activity occurred on Atchafalaya Delta WMA during 1991-92.

Extremely large numbers of waterfowl were present on the area during the fall and winter of 1991-92 and hunter effort was similar to the previous year. Aerial surveys to measure waterfowl abundance and distribution were conducted 3 times during 1991-92. During December 1991, waterfowl populations on the WMA peaked at nearly 100,000 ducks. The number of snow geese and whitefronts utilizing the area appears to be increasing each year. More restrictive bag limits may have been responsible for reduced hunter effort as compared to years prior to 1988. Hunter bag checks indicated the most common species harvested included teal, pintail, mallard, gadwall, mottled duck and widgeon.

Atchafalaya Delta provides habitat for many species of wading birds and shorebirds. Feeding, resting and nesting habitat is available for many species. Rookeries in woody vegetation are utilized by many wading bird species (ibis, night herons, egrets, roseate spoonbills, etc.). Sand islands formed from dredging activity are used by many species of shorebirds. Nesting activity was documented for skimmers, gull-billed terns, Forster's tern, least terns, black-necked stilts and common nighthawks in July, 1991.

A small impoundment adjacent to the campground at the Main Delta was put into operation during the summer of 1990 to provide habitat diversity for waterfowl. This first draw down produced an excellent crop of annual grasses as well as delta duck potato (*Saggitaria sp.*). Spring and summer drawdowns continued in 1991-92.

Atchafalaya River stages during 1991-92 created the need for maintenance dredging of the Atchafalaya River channel to maintain navigational requirements. As outlined in the "Atchafalaya Delta Wildlife Management Area Habitat Management Plan" Fur and Refuge Division worked closely with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, Dept. of Natural Resources, the Environmental Protection Agency and others to utilize dredged spoil material to enhance future delta development and create vegetated wetlands. This planning and dredging activity occurs annually and is instrumental in overall delta development. Approximately four million cubic yards of dredged material were removed from the navigation channel and strategically redeposited during the summer and fall 1991.

A major marsh enhancement project is being planned with funding through the Breaux/Johnson Bill. This project will take soil from Big Island and redistribute it to create marsh on the west side of Big Island. Through this soil removal, a major distributary channel will be created to aid in development of the western side of Main Delta.

Atchafalaya Delta WMA personnel continued to lend logistical support to various agencies conducting research on the management area. The LSU Center for Wetland Resources continues to conduct research on the impact of nutria feeding activity on vegetated wetlands on Atchafalaya Delta WMA. Various exclosures or study plots are used to assess nutria feeding activity.

A substantial amount of manpower was required for enforcement activities associated with Atchafalaya Delta WMA and its surrounding waters. In addition to enforcing specific rules and regulations, division personnel assisted in enforcement of commercial shrimping, fishing and oystering rules and regulations. The patrol boat *Atchafalaya* was used extensively during the spring and summer to enforce the inside closure of shrimp seasons. *Atchafalaya* was also used to ferry individuals on field trips to Atchafalaya Delta WMA and Point-Au-Fer Island. Personnel assisted U.S. Coast Guard and Iberia, St. Mary and Terrebonne Sheriff Departments in search and rescue operations. Other agencies provided logistical support included Department of Environmental Quality, Department of Natural Resources, U.S. Customs and Lafayette and Iberia Parish narcotics agents.

Pass-a-Loutre Wildlife Management Area. The Pass-A-Loutre Wildlife Management Area is composed of 66,000 acres of marshland located at the mouth of the Mississippi River in Plaquemines Parish. The area is extremely productive for waterfowl due to its location at the terminus of the flyway system and production of choice waterfowl plants. The entire delta system in which the management area is located has been experiencing significant marsh loss. Due to extreme marsh loss rates, several innovative marsh creation projects have been underway on the management area.

One such project utilizes man-made canals to direct sediment into subsided bay systems. The project shows potential for creating marsh within open water areas. The project was submitted in 1983 to the Governor's Coastal Erosion Task Force which confirmed the project and allocated approximately one half-million dollars for construction and scientific study. Construction was completed in the summer of 1986 and researchers are documenting the effectiveness of the silt diversion canals. The canals vary in width from 150 feet to 400 feet and island formation was observed after the spring floods of 1987 and 1988. It should also be noted that the 1988 Mississippi River stage was the lowest in recent history, which significantly reduced land building capabilities on silt diversion sites. During the spring floods of 1989, vegetated wetlands were produced by the diversions.

Six additional diversions were constructed during the spring of 1990. The projects were funded through Coastal Restoration funds and are being monitored to determine effectiveness in creating vegetated wetlands. Two additional diversions were constructed by oil and gas mitigation during 1991-92. Presently 16 sediment diversions have been constructed on the management area and six additional diversions are in various stages of planning.

A second project has also shown promise in the area of marsh creation. This concept utilizes synthetic materials to capture sediments which may ultimately be transported into the Gulf and lost to the natural delta building processes. A pilot project was completed in 1983; an expanded project was initiated in February, 1984. Results of the project indicate that sediment fencing has potential for creating marsh in overflow delta systems. Observations in the summer of 1987 revealed that open bay systems were converted to vegetated marsh. Sediment fencing projects were combined with the newly constructed sediment diversion projects in an effort to expedite marsh building processes. These projects are also being monitored to determine their effectiveness.

Several oil and gas mitigation projects resulted in the construction of 1,100 linear feet of sediment fencing projects on the management area during 1991-92. Presently, 1,700 feet of sediment fences have been constructed and additional mitigation commitments have been received for 1992-93.

The fencing concept is being expanded to Salvador Wildlife Management Area to investigate feasibility as a method of erosion control for oil field access canals. Additionally, the sediment fencing concept has been expanded to several sites on Atchafalaya Delta WMA which are presently being monitored.

The 1991-92 waterfowl season concluded with an excellent hunter success ratio of 2.3 birds per hunter effort. The annual archery season was continued during 1991-92. A total of 47 deer were harvested with 925 hunter efforts for a hunter success ratio of one deer per 20 hunter efforts.

Employees at the facility issued 342 citations during the fiscal year; accounting for a significant portion of citations issued in the southeastern portion of the state.

The majority of the citations were issued outside the boundaries of Pass-A-Loutre Wildlife Management Area.

The annual alligator harvest was continued on the management area. Two hundred and four alligators were harvested during the 1991 season. The average size was 6.10 feet. Information obtained from this harvest will be utilized to ascertain future alligator harvest levels.

Water quality stations were monitored throughout the year at two week intervals.

The Freeport Sulphur Company, which has been a major industry operating on the management area, is terminating operations. Abandonment activities will be conducted for several years. The Department and Freeport McMoran are working together to maintain the existing freshwater reservoir as a recreational fishing area. The plan involves replacing existing pumps with water control structures for fisheries management purposes.

Salvador Wildlife Management Area. Salvador Wildlife Management Area is located along the northwestern shore of Lake Salvador in St. Charles Parish. The area is comprised of approximately 30,000 acres of fresh and intermediate marsh which produces ideal habitat for waterfowl and alligators. A sizeable deer herd is present due to habitat diversity consisting of wax myrtle thickets, access canal levees and natural ridges.

The annual Salvador WMA either sex deer hunt was conducted during 1991-92. The three day hunt resulted in 879 hunters harvesting 99 deer for a hunter success ratio of one deer per 8.6 hunter efforts. Approximately 200 deer are harvested annually on the management area. Data obtained from the managed hunt will be utilized in conjunction with other information for future management decisions.

Research was continued with Louisiana State University to determine water movement into flotant marshes and non-flotant marshes. This will provide valuable information for future management of Salvador Wildlife Management Area.

The Salvador WMA experimental alligator harvest program continued during 1991. A total of 399 alligators were harvested with the average size taken being approximately 6.3 feet. The experimental harvest is part of an ongoing program designed to fill information voids.

During 1986, the U.S. Army Corps of Engineers in conjunction with the U.S. Fish and Wildlife Service and the Department reviewed the Salvador WMA for potential management sites for mitigation associated with a segment of the westbank hurricane protection levee. During 1987, Congress authorized mitigation for a segment of the westbank hurricane protection levee. The mitigation package included acquiring properties in excess of 1000 acres and authorization of one or more water control structures. The structural component of the mitigation project will be the construction of approximately 3,500 feet of a piling/tire breakwater to be located adjacent to the "Netherlands site" on the management area. The breakwater system will protect the fragile interior marsh system from high energy wave erosion generated from Lake Cataouatche.

Construction of the project was completed during 1991. Approximately 1,000 feet of additional breakwater was also constructed by Texaco to compensate for oil spill impacts which occurred in Lake Salvador during 1991. The site for the proposed land acquisition portion of the mitigation is being evaluated.

The Department requested an additional 2,000 feet of breakwater through the Coastal Protection Authority to add to the Corps' mitigation plan for wetlands protection.

The project was authorized in the 1991-92 Coastal Protection Plan.

A lakeshore nourishment project was conducted during 1989 through the Coastal Restoration Plan. Several thousand cubic yards of shell material were incorporated into the Lake Salvador shoreline in an effort to reduce erosion which threatens the interior systems. This project was monitored by Coastal Restoration Division during 1991.

The Department continued its involvement in the Davis Pond freshwater diversion which is a federally authorized project directed by the Corps of Engineers. Survey work for the project was continued by the Corps of Engineers during 1991-92. The Department has recommended that an outfall management scheme be included in the State's Coastal Restoration Plan to optimize freshwater dispersion into the adjacent management area.

Pointe-au-Chien Wildlife Management Area. Pointe-au-Chien Wildlife Management Area is comprised of approximately 30,000 acres of marshland. Marsh types vary from nearly fresh to brackish. The area provides habitat for waterfowl but is gradually changing to a more saline environment more conducive to marine organisms. The area has experienced extreme marsh loss rates in recent years. Factors which have influenced this deterioration include saltwater intrusion, canalization, reduction in fresh water and sediment influx, subsidence, extreme tidal fluctuation, erosion, and a rise in sea level.

The following projects have been proposed to offset this significant marsh deterioration process: the Montegut Project has placed approximately 3,500 acres of wetland under management. The project site is southeast of Montegut between two natural ridge systems formed by Bayou Terrebonne and Bayou St. Jean Charles. Approximately 4.5 miles of levee and two fixed crest weirs have placed this wetland system under management for enhancement of wildlife and fishery resources. During 1983 the project was proposed to the Governor's Coastal Erosion Task Force. Construction was initiated during the latter part of 1987. Due to the level of funding for this project the levee system was not constructed to original specifications. Subsidence and vandalism have required the Department to monitor and maintain the levees integrity. The feasibility of rebuilding the levee and replacing the weir with water control structures was requested through the Coastal Wetlands and Restoration authority and incorporated in the 90/91 Coastal Restoration Plan. The project is presently under construction.

The Grand Bayou Project encompasses approximately 4,500 acres of wetlands located west of Grand Bayou and Cutoff Canal. Similar to the Montegut Project, the area has experienced significant wetland loss. The original project proposed establishing approximately seven miles of levee system with three fixed crest weir structures. During 1987, the National Marine Fisheries Service requested that the Corps of Engineers consider constructing slotted weirs in place of the traditional fixed crest weirs. In 1988, the Department requested that water control structures be utilized in place of slotted weirs to add increased management flexibility for revegetation potential. The Corps of Engineers has incorporated the structure modification into the project. Construction of the project was completed during 1991.

In an effort to increase management flexibility within the Grand Bayou project, northern perimeter levee freshwater diversion structures were included in the 90/91 Coastal Restoration Plan. Coastal Use permits are presently being applied for.

Water quality stations have been established throughout the Pointe-au-Chien area. Salinity stations were monitored throughout 1991-92 and the data is being utilized in the formulation of management plans.

The Jean Charles project encompasses approximately 4,700 acres of deteriorated brackish marsh. The management unit is located between Bayou Pointe au Chien and the Jean Charles ridge system. Several parcels of property with this unit are located outside of the Pointe au Chien Management Area. The Department is negotiating with landowners to acquire properties for inclusion within this management unit. The project has been submitted to the Coastal Restoration Authority and has been included in the 90-91 plan. Project design has been substantially completed and the Department is anticipating that necessary landowner approvals will be obtained during 92-93.

The Department recently acquired approximately 1,700 acres which have been incorporated into the area. The new acquisition is predominately upland habitat and will significantly add to the diversity of the area which has traditionally been marsh habitat. The majority of the site is abandoned agriculture property that was historically a forested ridge system. The Department's long range plans involve reforestation of the upland areas. Approximately 35 acres of the area was planted with bottomland hardwood species during 1991. During 1991-92, 200 acres of the ridge were prepared for reforestation during January of 1993. All reforestation projects have been funded through mitigation or Coastal Restoration Funds.

Research Section

The Fur and Refuge Division's research program is managed by two biologists stationed in north Louisiana, nine biologists in coastal Louisiana, and a number of non-technical support personnel. Programs include alligator research and harvest, fur research and management, research directed toward marsh enhancement, marsh ecological monitoring, alligator farm research, alligator farm extension service, Canada geese, brown pelican and bald eagle conservation programs, estuarine fisheries research, pond culture studies, alligator snapping turtle studies and research directed towards conservation of Division managed property. Dissemination of information was an important function of the Fur and Refuge Division during the past year. Scientific information was distributed in the form of lectures to visiting school/university groups, technical writings, symposia presentations, in-service training programs, landowner/farmer extension, department movies, magazine articles, and through the news media. Professional expertise was provided for the implementation of international, federal and state legislation/regulations governing wise use of alligators, furbearers, coastal marshlands and other important wildlife and fisheries resources.

During 1991-92, results of six waterfowl research projects were published. The cooperative projects involved Fur and Refuge Division, U. S. Fish and Wildlife Service, National Wetlands Research Center, and State University of New York. Studies investigated: nutritional implications for small-bodied waterfowl, feeding preferences of spring-migrating blue-winged teal in southwestern Louisiana, mottled duck carcass composition and gut morphology in fall and winter in Louisiana, mottled duck carcass mass and nutrient dynamics during July/August molt in Louisiana, the frequency of protozoan parasites (sarcocystis) and its effect on winter carcass composition of mottled ducks, and the effects of saline water on growth and survival of mottled ducks in Louisiana.

Rockefeller Refuge waterfowl inventories were reinitiated in 1992 and will continue for several years. Inventory figures for Rockefeller and adjacent privately-owned lands will be compared to habitat quality; especially for selected management units on Rockefeller Refuge.

Approximately 35 miles of vegetative transect lines are sampled annually using the line transect method on Rockefeller Refuge. Results are expressed as to percent vegetative composition by species and vegetative coverage. In 1991-92, the surveys were continued in man-made impounded areas, semi-impounded marshes and unimpounded marsh throughout the refuge. Rainfall records were kept on a daily basis and submitted to the

National Weather Service. Water level and salinity station monitoring continued monthly. A site-specific vegetation study was begun in 1991 to evaluate responses of grasses to different water level and salinity management scenarios. Also, a vegetation study was begun in the Hog Bayou marsh west of Rockefeller.

Bald eagle production survey reports are compiled each year. Nest attempts, adults observed, eggs laid, and birds hatched and fledged are recorded for each nest and nest site known in the coastal zone. Reports of new nests are investigated each year and new nest locations are plotted for data compilation as to habitat, diet, etc. Louisiana's bald eagle population is showing a healthy increase. Active nest identified have increased from 25 in 1984 to 55 in 1992, when 89 fledglings were counted.

1992 was a banner year for brown pelican nesting production. The numbers of nests which produced fledgling pelicans in 1992 was conservatively estimated at 2,400. Four colonies (Grand Gosier Island, Last Island, Queen Bess Island, and Mississippi River mud lumps) produced 4,000 to 5,000 fledglings in 1992.

Since 1972, the Fur and Refuge Division has worked cooperatively with the Fish Division in their anadromous striped bass project. One to two day old fry are placed in the Rockefeller nursery until they are on feed. Once on feed, they are transferred to culture ponds until they reach three inches and stocked into the river systems. Annual production has ranged from 13,000 to 300,000. Initially, fish were stocked in both Calcasieu and Mermentau river systems; but in 1992 the Mermentau River was dropped from the stocking due to scarcity of recapture and success in the upper Calcasieu system. In June 1992, 30,152 fish were stocked at Hebert's Landing, 43,778 at I-10 Bridge, 82,520 at Ward 8 Park and 29,484 at Oakdale. Approximately 3,000 were stocked in the Joseph Harbor complex at Rockefeller Refuge.

Growth and movement studies of various fish species in response to conditions associated with management structures have been conducted since 1972. Initially, blue, channel and flathead catfish were tagged and released In 1991, the tagging of largemouth bass was initiated through cooperative work of a local high school student. Over 200 fish have been tagged and 14 recaptured. Though most apparently move less than a mile, one was recovered 5.5 air miles from the tagging site. In the fall of 1991 and winter of 1992, 184 redfish and 39 speckled trout were tagged near water control structures. Sixteen have been recaptured.

The popularity of the Division's marsh management program resulting in high yields of shrimp and crabs to recreational fishermen is evidenced in recreational use surveys. In 1987, 80,840 people visited Rockefeller. Vehicle detectors supported by aerial observations indicated use was up for the 4.8 mile Price Lake System (11,525 parties), and East End Locks (8,146 parties), but down for the boat launch (9,856 parties) during the 1991-92 fiscal year. Over 78,000 people from over ten countries visited the Refuge. An objective of this use survey is to document response associated with changing management strategies.

Pond culture studies were conducted with the exotic Pacific white shrimp in 1988 and the results presented at the 1990 World Aquaculture Society Conference. Production yields exceeded those reported from native shrimp. However, because of uncertainty of effects on native species and other environmental issues, research with this species ceased. In 1991, juvenile white shrimp from South Carolina were obtained and reared at Rockefeller for an LSU study in shrimp feed utilization.

Future aquaculture plans include work with the Australian Red Claw Crawfish and Saltwater Shrimp.

A research project was initiated in the spring of 1992 to investigate the habits and requirements of immature alligator snapping turtles, *Macroclemys temminckii*. The alligator snapping turtle is an important commercial and cultural species in Louisiana. Its' population status and whether it needs to be listed as a threatened species will be reviewed by the U.S. Fish and Wildlife Service in 1995. Twelve immature turtles were trapped in the northern end of Bayou Desiard near Monroe, Louisiana and fitted with radio telemetry units. Conditions being investigated along with movement patterns are macro and micro habitats, water depth and water temperature. The investigations are a cooperative effort between the Northeast Louisiana University staff, graduate students and the Fur & Refuge Division. The Fur & Refuge Division is the principle provider of equipment and funding. The gathering of field data is expected to continue through the spring of 1993.

Personnel of USL were under contract to provide an analysis of regulations of aquatic animals in State Wildlife Refuge, especially in relation to management structures. There is considerable mention in the literature that equates restricted migration with reduced populations. This equation gets no clear-cut guidance from ecological theory or available evidence. This ongoing study along with others suggests the contrary. Populations may be able to be maintained in these systems by several mechanisms: (1) recruitment, (2) increase growth, (3) alternate pathways for larval migration, such as over-marsh flooding, leaking structures, (4) ecological replacement by alternate species. This area is one of the least modified marshes in Louisiana and offers area to obtain insight into this ecological theory.

A USL graduate study is in progress at Rockefeller to determine and document various life history aspects of two species of fiddler crab, *Uca spinicarpa* and *U. longisignalis*. Preliminary findings indicate seasonal distribution from the intertidal zone. The study will conclude in February, 1993.

Approximately 85% of the alligator farms in Louisiana are feeding commercially prepared dry rations as a supplement along with a mixture of meat or fish. Approximately 18% of the farms are feeding just the commercially prepared dry diet with no supplementation. The dry pellet may be available 24 hours/day and on some farms alligators have become accustomed to eating dry pellets dispensed from mechanical feeders. Another feeding trial will continue during 1992-93.

Our most recent test in 1991-92 showed that alligator growth achieved with commercially available extruded dry pelletized rations increased linearly with increasing available protein by percentage. Diets tested included Burris Alligator Feed with 40%, 47%, and 56% protein, and nutria. Nutria gave the best growth, though the economics of providing dry foods must be considered.

A second feeding trial was conducted in 1991-92 to determine if the addition of steroids as an appetite stimulant would enhance growth in juvenile alligators. Three groups of alligators were supplemented with increasing doses of prednisone, and a control group was fed only dry pelletized rations. A modest increase in growth rate was achieved but it was not sufficient to warrant the required testing as to clearance of the drug from alligator tissues/meat, etc.

March, April, and May average ambient temperatures are correlated with the time of alligator nesting; warmer temperatures bring about an earlier nesting effort. In 1992 nesting occurred in the mid-range, extending from early-mid June for three weeks. Average ambient temperature was 67.3-67.4 degrees Fahrenheit for the 3-month period.

Annual aerial nest counts are conducted on a 2,000 acres study area on Rockefeller Refuge and the results from nest counts (nesting effort) are related to water levels and salinities for the months of March through June. Water level, salinity, and temperature are recorded in the study area. Ten to thirty-one acres per alligator nest were ranges experienced during the past ten years. In 1992, the average nest density was 10.0 acres per nest. This resulted in the excellent nesting effort in 1992. These studies will continue into 1992-93.

A study was initiated in 1984 to research the endangered Chinese alligator on Rockefeller Refuge for the purposes of (1) reproducing the species and (2) developing culture techniques. One pen is now functional, housing a pair of Chinese alligators acquired in 1984. Nesting was accomplished in 1992, with a clutch size of 31; of which 23 eggs were incubated. Sixty-one percent (14 of 23) of the fertile eggs hatched. The New York Zoological Society is raising the progeny from Rockefeller Refuge. The conservation project will continue indefinitely.

Several cooperative studies were undertaken and continued in 1991-92 with scientific researchers from several universities to further understand detailed areas of the physiology of the alligator. Studies are underway pertaining to refining nutrition/food supplements for captive breeder alligators; endocrinology studies on effects of insulin, epinephrine, and estradiol on blood sugar, amino acid and lipid metabolism in alligators; DNA studies to evaluate social/breeding hierarchy in adult alligators and multiple male parentage; studies on the anatomy and physiology of the biliary system and bile production in alligators; and baseline studies on the immune system of alligator and its role in nutrition/disease of farm raised alligators.

Fur Research and Management Section

During 1991/92 data collection and analysis continued on projects involving nutria, fox and coyote hunting preserves, alligators, fur harvest distribution, and waterfowl monitoring. Operation of the Louisiana Fur and Alligator Advisory Council has been a high priority during 1990/91. Considerable time and effort has been spent on fur market analysis (emphasis on nutria) and development of programs and strategies to combat national and international anti-trapping campaigns (see 1991/92 FAAC Annual Report). The goals of the Council are essential for the Division to carry out meaningful furbearer management programs.

Due to the importance of nutria to Louisiana's fur industry, (generally accounting for approximately 54% of the total value) emphasis is placed on research, management and marketing of this species. Field research and evaluation of a project entitled "An Experimental Reintroduction of Nutria and Subsequent Assessment of Changes in Population Parameters" continued during 1991/92. The main objective of this project is to determine if it is feasible to introduce nutria into marsh areas where nutria populations have declined and are nonexistent or at extremely low densities but habitat is suitable to support high populations. Since 1987 nearly 900 nutria have been released into ten study areas in Vermilion Parish. The majority of these nutria have been captured from Marsh Island. During the 1989/90 trapping season over 300 nutria were collected from seven release sites. Both pelt and tissue samples were collected to assess the impact of reintroductions. Samples have been processed and analyzed and the report is currently being written. Results will be utilized to make management recommendations to land managers. Of particular interest is reestablishing nutria populations in southwest Louisiana.

In conjunction with a contract with LSU a study to evaluate nutria pelt quality in southeast Louisiana was initiated in 1989-90. Areas of chronic, poor pelt quality are being studied to assess relative pelt quality and to determine possible causative agents. Collections of nutria were made in January 1990, vegetation sampled in August 1990 and additional nutria collections were conducted in December 1990. Analysis and report writing was completed in Spring 1992.

The experimental harvest of alligators on Marsh

Island Wildlife Refuge continued during 1991/92. Since 1986 a total of 6,815 alligators have been harvested from Marsh Island. All alligators were sold whole to the highest bidder. Data analysis continues on sex ratios, size class frequency distribution, production rates and habitat utilization. Other alligator research being conducted on Marsh Island includes nest counts, night counts and tagging and release of alligators for growth estimates. Nearly 4,000 hatchlings have been released since 1989. Results of the 1986-91 harvest will be examined and a new experimental harvest proposal will be developed for 1993. The 1992 harvest was canceled due to low hide prices which discouraged hunters from participating in this experimental program.

The experimental harvest of alligators on Salvador WMA continued during 1991/92. From 1986 through September, 1990 a total of 4,173 alligators were harvested. Each year's harvest was successfully completed and alligators have averaged approximately six feet in length (6.3 feet for hides). A report entitled "Experimental alligator harvest program on Salvador Wildlife Management Area 1986-1990" was written documenting the results of five years of intensive harvest. This manuscript was accepted for publication in 1992. Subsequent to this report a manuscript entitled "Salvador WMA Experimental Alligator Harvest Proposal 1991-1993" was submitted. This proposal outlined the need to collect reproductive tracts from alligators in fresh marsh habitat through an experimental summer harvest. A harvest with a quota of 400 alligators was conducted in July 1991. These harvested alligators averaged 6.3 feet in length and a reproductive rate of 19% was estimated for adult female alligators greater than six feet. This research will provide valuable information needed to estimate alligator populations. Other alligator research presently being conducted on Salvador WMA includes nest counts, night counts and tagging and release of alligators for sex ratio, growth rate and survival rate data.

During 1989/90 a complete set of regulations pertaining to fox/coyote hunting preserves were developed and implemented. Fox/coyote hunting preserves have gained popularity in recent years. They provide recreational opportunity for houndsmen throughout the year. During 1991/92 there were 48 fox/coyote hunting preserves in Louisiana with new preserves being licensed weekly. We also permit individuals to trap coyotes and sell captured animals to be released in the fox/coyote hunting preserves. A total of 47 coyote trapping permits were issued in 1991/92.

Fur and Refuge Division continued monitoring of the marsh area impacted by the Caernarvon Freshwater Diversion Project for vegetative composition, muskrats and alligators during 1991/92. Transect lines were flown to index muskrat populations by counting muskrat lodges and to monitor alligator populations by counting alligator nests. Vegetative transects to determine vegetative cover and species composition were completed during the fall of 1990. All transects were flown with a Bell Jet Ranger 206 helicopter. Data from these surveys have been summarized and furnished to Marine Fisheries Division. A summary prediversion report was provided in December, 1991.

Scientific papers that were being written or published during 1991/92 include:1) A female alligator reproductive study and associated population estimates; 2) An evaluation of effects of weir-management on emergent marsh vegetation at Marsh Island, Louisiana; 3) Pelt quality and hair elements in reestablished populations of feral nutria in Louisiana (U.S.A.); 4) Evaluation of nutria pelt quality at selected sites in southeastern Louisiana; 5) Spatial patterns of soil and vegetation characteristics relative to interior breakup of a gulf coast brackish marsh; 6) Intensive alligator harvest on Salvador Wildlife Management Area, Louisiana during 1986-1990; 7) Food habits of juvenile alligators: a comparison of native wild and farm-released alligators; 8) Growth rates and body condition factors for alligators in coastal Louisiana wetlands: a comparison of wild and farm-released juveniles.

Various projects are conducted annually to monitor furbearer harvest distribution and total harvest. Each year fur buyers and dealers are required to submit reports providing information on pelts purchased by species and parish of harvest. This data provides valuable information on fur harvest distribution by parish, region and habitat type. The Cooperative Extension Service provides assistance in compilation of the fur harvest distribution data. Annual audits of all fur dealers provide a record of total pelts by species shipped from Louisiana. Otter and bobcat possession tags provide data on timing and locations of all bobcat and otter harvested in the state.

Monitoring of waterfowl abundance and distribution on State Wildlife Refuge, Marsh Island Wildlife Refuge and Atchafalaya Delta Wildlife Management Area was conducted during 1991/92. Biweekly surveys are conducted from November to February to determine waterfowl usage by habitat type on these areas.

The Fur Research and Management Section continued to assist the staff at Jean Lafitte National Historical Park and Preserves in management of nutria to prevent vegetative impacts to the park.

Additionally, personnel from the Fur Research and Management Section assisted in the following Division programs and projects: 1) Administration of the annual statewide alligator harvest program for Iberia, St. Mary, St. Martin, Assumption, Terrebonne and Lafourche Parishes. This area accounts for approximately 41% of the tags issued each year. 2) Assisted Rockefeller Refuge personnel in conducting the annual coastwide alligator nest count survey. 3) Verification of alligator hides prior to shipment out of state. 4) Assisted Salvador WMA personnel on check stations for the annual managed deer hunts.

Division staff continued to represent the Department and the IAFWA at meetings concerning the international effort to standardize trapping systems for furbearers and to monitor and develop strategies to counter animal rights activities. Several meetings at the national and international level are attended annually. Additionally, technical meetings such as the Southeast Furbearer Workshop (Mississippi) were attended during 1991/92. Meetings provide unique opportunities to the technical staff to discuss research and management goals and problems associated with the furbearer resource. Division personnel have been actively involved with the Fur Resources Committee of the International Association of Fish and Wildlife Agencies since its creation in 1976. Staff personnel have served as vice-chairman for nine years and currently serve as chairman. Division personnel are also serving on the IAFWA Fur Resources Technical Subcommittee which is composed of furbearer biologists from all regions of the United States and Canada. This committee advises the main Fur Resources Committee of regional problems and concerns related to furbearer management. The subcommittee has met in South Dakota, Louisiana and Texas in recent years. Louisiana provided coordination and completion of the most significant study yet concerning injury reduction and efficiency evaluation utilizing the soft catch trapping systems. This research was conducted under the auspices of the International Association of Fish and Wildlife Agencies. The Division continued to provide compilation of harvest data for the United States as requested by the IAFWA. Louisiana has served as a clearing house for this information for the past 8 years. This information was published in a fur harvest document by the Ontario Ministry of Natural Resources as well as in a 10 year wildlife status summary completed by the U.S. Forest Service.

The Fur and Alligator Advisory Council completed its fifth fiscal year of operation in June of 1992. The Council and special fund are the result of Act 455 of the 1986 regular legislative session. This legislation raised the cost of a trapping license (for trappers 15 and older) from $2.00 to $25.00 and dedicated $20.00 of this $25.00 to a special fund. Twenty dollars out of each alligator hunting license was also dedicated to this fund. The Fur and Alligator Public Education and Marketing Fund was designed to support programs to insure a stable future for the state's fur and alligator industry.

The Council and its special fund exist because of serious problems facing Louisiana's fur trappers, alligator hunters and major coastal landowners. The problems grew over a period of years and as such will take a period of years to correct. However they are correctable and to believe otherwise is to write off an industry that has produced the largest fur and alligator harvest in the United States.

The two major goals of the Council are education of the public concerning the role of trapping in wildlife conservation and market stabilization and enhancement for Louisiana's fur and alligator products. See 1991-92 FAAC Annual Report for a summary of projects.

Resource Management Section

Inventory methods, harvest regulations, tagging requirements, reporting requirements, and a complex computer program were established to regulate and monitor harvest of surplus alligators in Louisiana and distribute the kill, in proportion to existing populations, over the area open for harvest. The coastal alligator nest survey revealed 1991 to be the second best nesting year on record (since survey began in 1970). The extensive farm/wild computer program underwent considerable upgrade in 1991.

In 1991 and 1992, revised/updated vegetative maps of marsh types (fresh, intermediate, brackish, saline) were utilized to calculate hunter quotas for wild alligator harvest tag allotments. In 1992, 25,360 tags were issued to 1,735 commercial hunters on 4.3 million acres.

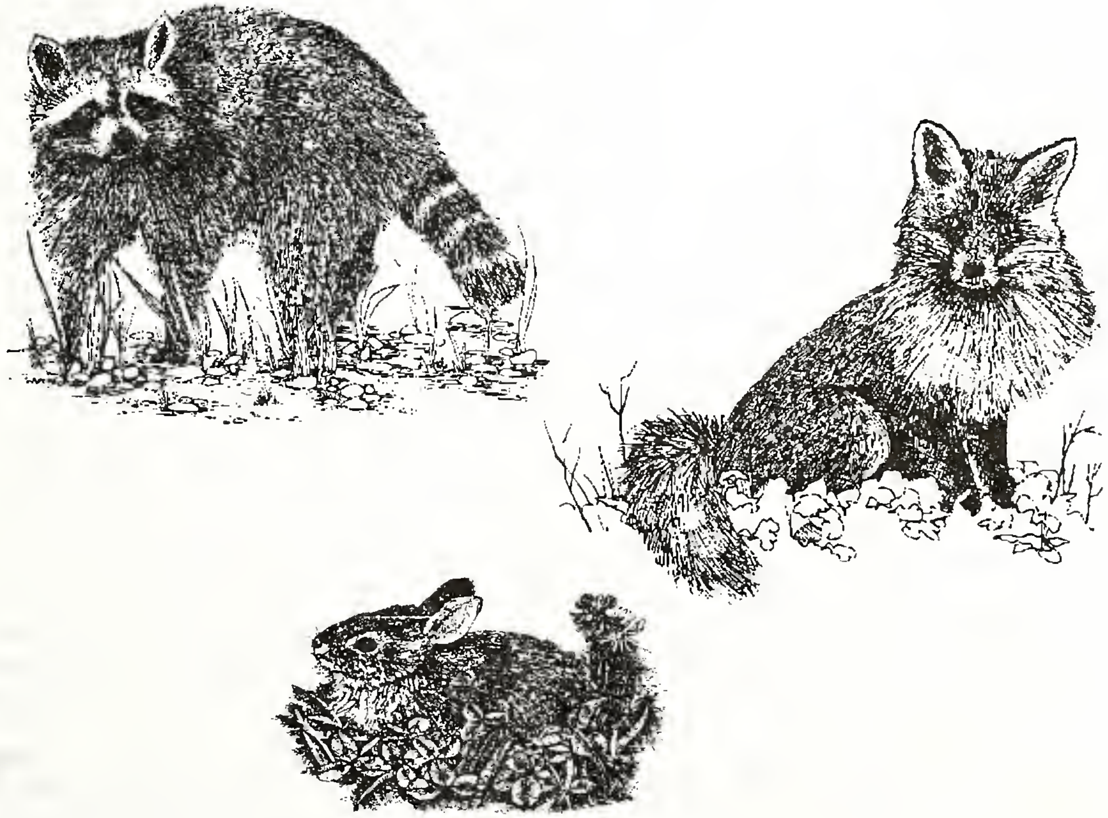
Louisiana Department of Wildlife and Fisheries Commission regulations for the alligator industry were revised in 1992, resulting in a document to regulate not only the wild alligator harvest but to update the rules and regulations necessary to monitor and regulate the growing alligator farming industry. There were 136 licensed alligator farms/ranches in Louisiana. Total licensed farms/ranches in April, 1990 amounted to 92. Statewide farm/ranch inventory as of December 31, 1991 was approximately 286,000 alligators. Thirty-seven farms have been in business long enough to establish breeding facilities and approximately 3,300 breeders are being maintained. However, only 54% of the breeders have been raised long enough to become sexually mature.

Louisiana alligator farm inventory expanded during 1989 as a result of an aggressive farm stock collection program; utilizing wild produced eggs and hatchling alligators.

The 1990 harvest (September 1990-August 1991) on farms/ranches reached approximately 89,000 skins. Approximately 21,161 alligators were sold to producers in other states in calendar year January 1991-December 1991. The 1991 harvest (September 1991-August 1992) on farms/ranches reached 119,000. LSU, in cooperation with Louisiana Department of Wildlife and Fisheries, published an economic assessment of the Louisiana Alligator Farm/Ranching Industry in 1991. The title of the publication is "Louisiana Alligator Farming; 1990 Economic Impact." Release of juvenile alligators in the wild to compensate for the collection of eggs is conducted on an annual basis by Fur and Refuge Division personnel. The release in 1991 amounted to approximately 44,405 alligators, and 35,579 were released in 1992. Intensive alligator nest counts were conducted on selected marshlands along the coast and average acres per nest calculated for each selected study area. The release back to the wild on these areas was carefully done, with all released alligators being measured, marked, tagged, and sexed.

Wild alligators of a size comparable to the ranch releases were hand captured during summer 1990 and 1991 and handled exactly as previously described for the ranched alligators. Preliminary data collected when the wild and farm-released alligators were retrapped or harvested indicate that farm-released alligators grow at least as well as, and usually better than, wild counterparts. Stomach content evaluation was done on farm-released and wild alligators harvested at Marsh Island Refuge, and documented that farm-released alligators are able to forage successfully for prey and more often consume larger prey species (birds, mammals) generally taken by older/larger alligators. Two papers concerning these topics were prepared by refuge personnel and were presented at the 11th Working Meeting of the Crocodile Specialist Group in Victoria Falls, Zimbabwe, Africa and are accepted for publication in refereed scientific journals. Long term follow-up on the status of these farm-released alligators and comparison to wild tag returns will allow further evaluation on the program including estimates of survivorship, studies on dispersal, etc.

A total of 296,294 furbearer pelts valued at $972,437 were harvested during the 1991-92 trapping season. Although this harvest and value increased 100% from the previous year, we continue to be plagued with poor pelt prices and low trapper effort. The nutria continues to be the most important furbearer with a harvest of 240,229 valued at $750,687. At this harvest level, nutria continue to create problems by affecting sugarcane crops and causing marsh damages in areas of southeast Louisiana. A total of 339,000 pounds of meat from furbearers was sold for a value of $152,500.



GAME DIVISION

Land Acquisition

The Land Acquisition program made some significant accomplishments this fiscal year, by acquiring two new Wildlife Management Areas (WMAs) and adding inholding or adjacent tracts to two existing WMAs. The Tunica Hills WMA, consisting of 2,945 acres, was purchased in the loess bluff, upland hardwoods area of northern West Feliciana Parish. This is a unique habitat type in Louisiana and supports tremendous diversity of plants and wildlife, including some species rare to Louisiana. Another new area, Lake Ramsey WMA, which contains 796 acres of flatwood pine-savannah habitat, was purchased in St. Tammany Parish. This unique habitat type contains a rich floral diversity characteristic of the historic longleaf pine forest. These acquisitions which involved multiple landowners, accomplished the goal of procuring unique habitat communities important to Louisiana. They will also provide important outdoor recreational opportunities to meet the increasing demand in southeast Louisiana. In addition to these new WMAs, the Sicily Island Hills WMA in Catahoula Parish was enlarged with the acquisition of six tracts totaling approximately 510 acres of upland mixed pine-hardwood habitat. Likewise, the Pomme de Terre WMA in Avoyelles Parish, was enlarged by 890 acres with the purchase of forestland which increases the bottomland hardwood component of that WMA. We expect further acquisitions to these small, yet popular areas next fiscal year as negotiations and existing purchase agreements are consummated. Bottomland hardwood is our most productive wildlife habitat and was devastated by conversion to agriculture in the 1970s and early 1980s. These additions to existing WMAs have an additional benefit of not significantly increasing personnel demands on the department.

The Game Division's acquisition program anticipates several projects to be completed next year. Land acquisition is a program from which all Louisianans can benefit, now and in the future. The acquisition of these significant wildlife lands is the best way to secure the bountiful and diverse wildlife that has been such an important part of our history in the Sportsman's Paradise.

Forestry Section

Forest management continued this fiscal year on Department owned WMAs with completion of growth monitoring plots (GMPs) on Grassy Lake and Little River WMAs. The WMA Forest Management Policy Plan was completed and compartment maps developed for all WMAs. General forest inventories were completed in scheduled compartments for Saline, Russell Sage, Boeuf, Pearl River and Three Rivers WMAs.

Harvest preparations, including sale layout, inventory, regeneration counts, marking, map work and proposal preparations were accomplished on Pearl River, Saline, Sherburne, Bayou Macon, Russell Sage and Sherburne WMAs.

Stand improvement work continued with chemical injection on Sherburne, Attakapas Island and Loggy Bayou WMAs. This work was conducted for pre-commercial thinnings of hardwood plantations, as well as site preparation and release of under-planted or naturally regenerated stands prior to and following commercial harvests.

A field biologist vacancy was filled in March, bringing the section back to three employees, and interviews were conducted for an additional position.

Assistance from district personnel is necessary to accomplish the management tasks required for proper stewardship of our lands. Attendance in continuing education courses by involved district personnel and the Forestry Section staff is necessary to insure proper management of the natural resources associated with the Department's WMAs. Various courses and workshops attended this year included the Natural Regeneration of Hardwood Stands Short course in Greenville, MS and the Hardwood Log and Lumber Grading Workshop at Louisiana Tech University.

Reforestation work continued in the districts, with work concentrated on Elbow Slough, Loggy Bayou, Ouachita, Sherburne and Alexander State Forest WMAs, as well as Atchafalaya National Wildlife Refuge. Activities included site development and preparation, seedling or seed planting, survival plot establishment and survival checks.

Acorn collections continued statewide by district personnel to insure a seed and seedling source for future reforestation efforts. Compilation of the Annual WMA Mast Survey Report aids this effort by concentrating work efforts where the most abundant and needed species are available. The mast survey also provides an indication of reproductive potential of forest wildlife species.

Other WMA timber management activities included prescribed burning on Union WMA, beaver control on Saline, Ouachita and Pearl River WMAs; marking boundaries on Tunica Hills WMA and Bayou Macon WMA; construction of ATV trails and bridges on Bayou Macon WMA; and detection and suppression of southern pine beetle infestations on Sicily Island Hills WMA.

Cooperative work continued on USDA Forest Service lands with review of and recommendations on the Ranger District Compartment prescriptions.

Progressive development of the Forest Stewardship Program (FSP) continued in cooperation with the Louisiana Department of Agriculture and Forestry and other cooperating state and federal agencies. Various committee meetings were attended in the development process of the program's plan and budget preparation. Plan development for the Stewardship Incentive Program (SIP) was completed and funds were available this year to begin assisting landowners with prescribed management practices to improve their natural resource holdings.

Several certified Stewardship Forests were dedicated. Certification of Stewardship Forests recognizes landowners for exemplary management of forestlands.

The Forestry Section participated in the development and establishment of the Black Bear Conservation Committee (BBCC). This was an effort by the Louisiana Forestry Association (LFA) as well as state and federal natural resource agencies to cooperatively develop a plan for restoration of the Louisiana Black Bear. A management handbook was developed and reviewed.

Assistance was provided to the districts for managed hunts, hunter bag checks on WMAs, and technical assistance to hunting clubs and industry. Forestry Section personnel met with university researchers to establish research projects on WMAs and conducted tours of WMA reforestation activities.

Forest and wildlife management related meetings attended throughout the year included LFA wildlife committee, Louisiana Chapter of the Wildlife Society, Southeastern Association of Fish and Wildlife Agencies Forest Resources Technical Committee, Louisiana Wildlife Federation, Louisiana Forestry Commission, Southeastern Deer Study SIP Training, LFA Wildlife Committee, and BBCC Task Force. Additionally, meetings were continued regarding the language being adopted for purchase of environmental easements in the Atchafalaya Basin by the U.S. Army Corps of Engineers. Keeping up to date with activities associated with these various organizations is important to the progressive management of our resources.

Additional work accomplished this year was the appraisal of new lands for acquisition and addition to the WMA system. Approximately 21,000 acres were appraised for possible purchase from willing sellers in Sabine, Concordia, Tensas and West Feliciana Parishes. This process included inventory, mapping and valuation of present forest conditions on each tract.

Research Section

The Research Section gathers data on game birds and animals, largely for use in formulating hunting regulations. Separate programs monitor the population status of dove, deer, waterfowl, turkey, and upland game.

Doves. Maintaining the mourning dove population in a healthy, productive state is the primary dove management goal. This concept is designed to provide recreational opportunities for both the hunting and non-hunting public. The management program includes population surveys necessary to provide information for properly regulating the harvest.

The dove population in the spring has been monitored nationwide since 1953 by a call-count survey along approximately 1,000 randomly located routes. The survey takes a measure of the doves heard cooing during the nesting season along certain roadsides throughout the nation. Each route is located along lightly traveled roads and has 20 listening stations spaced at one-mile intervals. At each stop, a biologist records the number of doves heard calling during a 3-minute period. The counts begin one-half hour before sunrise and continue for two hours. This count of calling doves is used by the U. S. Fish and Wildlife Service to decide how many days of hunting each state will be allowed and how many doves per day hunters will be permitted to bag. States may then select the season they prefer within this framework.

Louisiana's dove population is monitored along 19 routes randomly located throughout the state. In May 1991, an average of approximately 13 doves per route was recorded. This represents an increase from 12 doves per route in 1990 and indicates a relatively low but stable dove breeding population for Louisiana.

Dove hunting regulations for 1991 were set at 60 days with a bag limit of 15 birds. Shooting hours remained unchanged from the year before allowing all-day hunting, except on opening weekends of each segment when hunting was restricted to afternoons only. This compromise seems to have satisfied most Louisiana dove hunters.

A survey of resident license holders indicates that approximately 62,000 Louisiana hunters harvested 1.2 million doves during the 1991-92 season. Both the breeding population and the harvest appear to be relatively unchanged from past years.

Deer. Deer check stations were operated on 30 wildlife management areas. In addition, 16 youth hunts and three handicapped hunts were held on WMAs. These hunts resulted in a known deer harvest of 3,402 deer and accounted for 32,650 hunter efforts. The harvest information was entered into a computer program for analysis and evaluation of herd condition. This information was used to establish deer seasons and managed hunts for 1992-93.

Intensive deer habitat surveys and inventories were conducted on nine areas. This included three WMAs and six hunting clubs. This new technique measures availability and utilization of browse and provides additional insight into herd density. Other browse surveys were done throughout the state.

Disease and parasite investigations were done on four areas. These included Tensas NWR, Lake Ophelia NWR, Bercham Hunting Club and private land in Calcasieu Parish. Breeding and ovulation data was collected from deer in East Feliciana, LaSalle and Lafourche parishes.

A publication concerning Louisiana Big Game Records for 1979-1991 was prepared and is available to the public upon request. This booklet is a listing of record deer, bear, and turkeys which have been killed in Louisiana.

The 1991-92 harvest survey was completed and is available to the public upon request. This survey gives information as to the estimated harvest of big game, small game, resident and migratory birds. It also gives estimates for hunting days and areas frequently used by Louisiana hunters.

During the 1991/92 deer season 725 clubs and landowners enrolled 1.6 million acres of land in the Deer Management Assistance Program. This program generated $93,794 for the Department. A total of 19,013 deer (8,234 antlered bucks and 10,779 antlerless deer) were harvested by DMAP coordinators. information collected from this program was entered into the deer computer program and analyzed; harvest reports were made available to individual clubs.

Waterfowl. Louisiana has approximately 3.5 million acres of coastal marsh that winter large and diverse waterfowl populations. Aerial waterfowl inventories of the entire coastal marsh and associated agricultural lands in north central and northeast Louisiana are conducted each winter. It is estimated that 5 million waterfowl migrate down the central and Mississippi flyways to winter in Louisiana. The mid-winter inventory indicated 4 million ducks and 600,000 geese in the coastal marsh and inland areas of the Mississippi delta during January, 1992.

Duck hunters in Louisiana and across the country again faced restrictive hunting regulations. The conventional bag system was used for the fourth consecutive year with hunting days continuing at 30 statewide. Preliminary harvest information indicates hunter participation and success were comparable to the previous year.

In the 1991-92 season, 63,000 hunters bagged 560,000 ducks. This represents a 5% reduction in number of hunters, with the duck harvest falling 13 percent from the previous year. Species composition were blue-winged teal 8%, green-winged teal 13%, wood duck 16%, gadwall 18%, mallard 18%, with pintail, shoveler, wigeon and ring-necked duck comprising most of the remainder. Goose harvest also decreased by 13 percent in 1991-92 and fell to 114,000. White-fronted geese comprised 57 percent of the harvest with blue and snow geese accounting for the remainder.

Louisiana is continuing to play an important role in the North American Waterfowl Management Plan (NAWMP). Portions of two joint ventures are located in Louisiana: the Gulf Coast and Lower Mississippi Valley joint ventures. In Louisiana, NAWMP is continuing to produce the habitat benefits to waterfowl it was designed to provide. NAWMP projects involving water level management, reforestation of cleared bottomland hardwoods, habitat creation, sanctuary establishment, and land acquisition have been accomplished.

Wetland habitat projects utilizing Ducks Unlimited MARSH funds have been approved on both Red River and Boeuf WMAs. The Red River WMA project is in the permitting and planning stage and the Boeuf project is almost ready to go out on bids. Additionally, plans for renovation of the greentree reservoir on Bayou Macon WMA as well as development of agricultural lands for winter flooding are being submitted for approval to Ducks Unlimited. Repairs to flood damage of the Ouachita WMA MARSH project have been completed and the water control structures for the Soda Lake MARSH project have been acquired and will be installed when the impoundments are drained in the summer of 1993. Plans are presently being drawn up for other wetland projects which will be submitted to Ducks Unlimited for future funding. These plans include the development on two major waterfowl projects on the Sherburne WMA.

The Louisiana Waterfowl Project, the private lands wetlands habitat development program in Louisiana, has become a reality this year. This program is a joint venture including this Department, Ducks Unlimited, the Soil Conservation Service and selected private landowners in northeast Louisiana. This project has been submitted and approved for North American Wetland Conservation Act (Mitchell Bill) funding. A number of landowner contacts have been made and large quantities of pipe to be used for the water control structures have been received and stored at the Ouachita WMA. A field day, designed to introduce landowners to the Louisiana Waterfowl Project, was held in conjunction with the dedication of the first completed project in Richland parish on the Dave's Bayou Farm of Tensas Delta Land Co. A large number of area farmers as well as joint venture cooperators attended the dedication.

Work on the marsh creation projects initiated at the Mississippi River Delta is still progressing. Construction of a number of delta splays has been completed and others are presently under construction.

The Department is presently working with Ducks Unlimited to develop the "Ten Most Wanted" list for Louisiana. This is a list of important wetland development projects which will be shopped by Ducks Unlimited for donor funding. These projects will involve habitat enhancement as well as wetland development. A donor project, which will improve waterfowl habitat on Pomme-de-Terre, Grassy Lake and Spring Bayou WMA's has been submitted to Ducks Unlimited. This project is presently being reviewed by Monsanto and should be approved in the near future.

The NAWMP Coordinator has been active as Louisiana's representative at numerous meetings concerning both joint ventures, the Mississippi Flyway Council, and has been actively involved in the Department's land acquisition and development programs. Other duties involve aerial waterfowl surveys, waterfowl related research projects on Catahoula Lake and waterfowl research and development projects statewide.

Turkey. Louisiana's wild turkey population has decreased slightly over the past two years due to poor hatch conditions associated with heavy rains during the spring of 1990 and 1991. Despite this, the outlook for wild turkeys in Louisiana looks bright. During the 1992 trapping and relocation operation, 117 wild turkeys were trapped for restocking. The majority of these birds were released in north-central Louisiana. Restocking efforts will continue until all available turkey habitat contains a viable turkey population.

The most recent survey indicated a drop in turkey harvest of approximately 2,000 birds from 1990. There were 17,755 hunters who harvested 8,700 wild turkeys during the spring of 1991. Louisiana's wild turkey population is estimated to be 50,000 to 60,000 birds.

The voluntary turkey check stations continued to produce valuable information on turkeys throughout Louisiana. We believe that about 10% of the turkeys bagged are reported at the 200 check stations. This information furnishes the department with trends in populations, age classes, weights and other data which help in management decisions. During the 1992 spring gobbler season 1,013 turkeys were checked at these stations.

There were 52 turkeys field tested for Mycoplasma galliseptum (MG) by Department biologists with negative results on all birds tested. Continued field testing for disease will help maintain healthy flocks.

Upland Game Section

Quail. Two statewide population surveys were conducted: the wing and hunter survey and the fall whistling survey. Hunters participating in the annual wing survey supplied 476 wings. From these wings, sex and age ratios were determined as well as peak hatching periods. In addition, hunters provided data such as coveys found per hunt, bag and crippling losses. Similar information was obtained from the Sandy Hollow WMA, where daily check-in is required.

Statewide fall whistling counts were conducted on 48 randomly located routes and an additional eight routes on Department managed WMAs or other government properties. Inferences about population status and habitat condition were developed based on the combined results of these two survey techniques and general observations by Department personnel during the breeding season. Data are summarized in the Federal Aid W-55-06 Annual Report.

The banding study initiated in the fall of 1990 to assess the impact of hunting on the populations continued. During the 1991-92 season, 74 quail were banded and only eight percent were reported bagged. The telemetry study to determine late winter mortality and productivity initiated in February 1991 continued. Radio tagged quail were monitored during the summer of 1991 and 1992. Progress reports are in the Federal Aid W-55-06 Annual Report.

The Cooperative Quail Project, a joint project between the Louisiana Department of Wildlife and Fisheries, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the Central Louisiana Chapter of Quail Unlimited, continued in 1991-92. Food plots were established and the population monitoring programs, including a telemetry study, were continued.

Pheasants. The first hunting season on pheasants in Louisiana was held during November - December 1990. Spring cock pheasant crowing counts were conducted in March and April 1992 to assess hunting impact. The average count of 77 calls/survey was almost double the 1991 value and the peak count was the highest ever recorded for Louisiana. Participation in hunting during the 1991 season was very light.

Woodcock. A woodcock banding program was initiated in 1990 to determine sex and age ratios, site fidelity, movement patterns and harvest rates of woodcock wintering in Louisiana. During November 1991 - February 1992, 275 woodcock were banded (247 on one area). Fourteen were reported recovered by hunters; excluding one bird banded in January 1991, the mean period between banding and harvest was 22 days.

Section personnel also participated in the U.S. Fish and Wildlife Service Annual Woodcock Wing Bee. Data derived from aging and sexing in excess of 15,000 woodcock wings are used to develop trend data on woodcock production and hunter success. These data, in combination with breeding bird surveys, are used to develop management strategies for woodcock. Although woodcock are considered an underutilized species in Louisiana by many people, Louisiana hunters' harvest of woodcock actually ranks among the country's highest.

Upland Development. Upland game development work continued on WMAs. Food plots totaling almost 1,000 acres were planted by division personnel. An additional 10,000 acres were bushhogged, disced or control burned.

District Activities

District I. District I is located in northwest Louisiana and includes Caddo, Bossier, Webster, Claiborne, Bienville, Red River and DeSoto Parishes. Four WMAs comprising 70,000 acres as well as an additional 30,000 acres of national forest are located within this district.

Work activities in District I were of a wide variety. On the WMAs, routine patrols to monitor user compliance of rules and regulations were conducted as well as maintenance of buildings and grounds. District personnel assisted landowners with wildlife problems, offered wildlife management recommendations, assisted in research projects, attended public meetings, and cooperated with other agencies.

Deer harvest in District I was excellent in 1991-92. All District I WMAs had outstanding hunter success and attracted many hunters.

Over 200 hunting clubs participated in the Department's Deer Management Assistance Program in this district.

District II. District II includes the northeastern Louisiana parishes of East Carroll, Jackson, Lincoln, Morehouse, Ouachita, Richland, Union, and West Carroll. Included within the district are the Bayou Macon, Georgia-Pacific, Ouachita, Russell Sage, and Union Wildlife Management Areas. Floy McElroy Wildlife Management Area, a 700 acre tract donated to the state, is managed on a low maintenance basis until fully released by the donor.

Bayou Macon Wildlife Management Area, a 6,900 acre tract in East Carroll Parish was purchased in July, 1991. District personnel marked the boundary (in excess of 20 miles), established ATV trails, erected information stations, controlled vegetation, and performed numerous tasks required to ready the WMA for public use.

District personnel released 49 wild turkeys in Union Parish as part of the department's continuing restoration program. Several potential release areas were surveyed. Data from hunter-bagged turkeys were collected from check stations throughout the district.

One hundred seventeen hunting clubs and landowners representing 230,000 acres participated in the Deer Management Assistance Program. Biologists spent considerable time conducting field surveys, attending club meetings, preparing harvest recommendations, issuing tags, and analyzing data associated with the DMAP program. Technical advice was provided to other landowners for the management of deer, waterfowl, turkey, upland game, nongame wildlife, and timber resources.

Biologists presented programs to sporting, civic, and governmental organizations. Information and assistance was provided to outdoor writers, TV, and newspaper journalists. Hunting season recommendations and regulations were formulated and presented for consideration by the Wildlife and Fisheries Commission. The District Supervisor assisted in the preparation and editing of the annual Hunting Regulations Pamphlet.

A National Hunting and Fishing Day observance was held at the district headquarters which was attended by more than 2,800 persons.

Managed public hunts for deer (regular gun, muzzleloader and archery), dove, quail, rabbit, raccoon, squirrel, wild turkey, woodcock, and waterfowl were conducted on district WMAs. The experimental either-sex deer season on Union WMA continued with a record harvest of 279. Archery hunters bagged more than 200 deer on the Bayou Macon WMA. Trapping seasons for furbearers were held on each area. Crawfishing and fishing opportunities were utilized by several thousand persons. Road and bridge repair, levee repair, water control structure operation, pump station operation, food plot planting, and boundary maintenance are examples of the many activities carried out on the wildlife management areas. Law enforcement and routine maintenance duties were performed on each WMA.

Hardwood seedlings and acorns were planted on 230 acres of reclaimed farmland on Ouachita WMA and 253 acres on Bayou Macon WMA. One hundred acres of pine habitat were prescribed burned on Union WMA.

The wood duck nest box program was continued with 218 available boxes maintained. One hundred and eighty four nest boxes were utilized, producing 3,786 total eggs. Sixty one nesting wood duck hens were banded. Twenty four bluebird nest boxes were erected on Bayou Macon WMA.

Goose surveys, mourning dove survey routes, alligator season management, wildlife crop depredation assessment, Forest Stewardship Program activities, Ducks Unlimited Private Lands Initiative projects, quail survey routes and coordinating mineral development activities consumed many biologist work days.

District III. District III is located in west-central Louisiana. It is comprised of Grant, Natchitoches, Rapides, Sabine, Vernon and Winn parishes. The area is predominately piney woods although a major portion of the Red River valley lies within the district. District III provides hunting for all Louisiana game species except pheasant. Deer, turkey and squirrel draw the most interest from area sportsmen. In addition to seven WMAs (Alexandria State Forest, Boise Vernon, Camp Beauregard, Fort Polk, Little River, Peason Ridge and Sabine) totaling 235,711 acres, there are approximately 600,000 acres of U. S. Forest Service property located with District III.

A new WMA was added to the District. The 12,500 acre area is owned by the Louisiana National Guard. It has been designated as Camp Beauregard WMA and will be operated in a similar manner as Ft. Polk and Peason Ridge WMAs which are also military reservations that require daily permits. Although current game populations are low, the area has excellent long term potential.

Activities on established WMAs included planting over 200 acres in food plots, road and facility maintenance, habitat enhancement and patrol work. Daily permit either-sex hunts were conducted on Alexander State Forest, Boise Vernon, Ft. Polk, Peason Ridge, and Sabine WMAs. On Little River WMA road improvement and campground projects were begun. District personnel were also instrumental in the construction of a public shooting range on Alexander State Forest WMA. Considerable progress was made on a levee construction project on the Elbough Slough waterfowl refuge.

The wood duck nest box program continues to be administered by the District III biologist. Bids for construction of boxes and predator guards, obtaining donated pipe, distribution of all material as well as compilation of nesting success reports were all handled by District III personnel.

Department employees worked in cooperation with U. S. Forest Service personnel on comprehensive browse utilization studies designed to monitor deer herd levels on Kisatchie National Forest. The study is intended to evaluate the effect of reduced deer seasons on national forest property which were implemented for the 1990-91 season.

Hunter success was good within the district, especially for turkey and squirrel. An early rut and warm weather hampered late season deer hunting.

Other activities included public alligator hunts, quail survey, dove call routes, goose population surveys, forest stewardship and the DMAP program. Participation in DMAP continued to increase, reflecting the growing interest in private deer leases.

District IV. District IV is located in north central Louisiana and comprised of seven parishes: Caldwell, Catahoula, Concordia, Franklin, LaSalle, Madison and Tensas. The headquarter facility is in Ferriday, Louisiana. Wildlife habitat is diverse, ranging from mixed pine-hardwood uplands to bottomland hardwood forest associated with the alluvial flood plain of the Boeuf, Black, Red, Ouachita, Tensas and Mississippi river systems.

Many native furbearers and migratory species are found in District IV. Good deer and squirrel seasons were recorded this year. Waterfowl hunter numbers were down from previous seasons and kill was average. Wild turkey harvests were down over most of the district, a result of poor reproduction over the last several years.

Six Department owned Wildlife Management Areas are located in District IV, totaling approximately 178,000 acres. Managed hunts were conducted on the wildlife management areas for resident and migratory game species. Either-sex deer seasons were held with 5,326 hunters harvesting 478 deer, for an average of 11.2 efforts per kill. Additionally, archery, youth, muzzleloader and buck-only deer hunts were held on most areas. Turkey seasons were held on Big Lake, Boeuf, Red River and Three Rivers WMAs. Hunter success was lower than usual on Big Lake and Boeuf WMAs with Red River and Three Rivers WMAs having excellent results. An estimated 100 turkeys were killed by an estimated 850 hunters for 8.5 efforts per turkey bagged.

Activities in 1991 covered a broad spectrum of wildlife related services, such as operation of District IV headquarter facilities, management of Catahoula Lake, formulation of hunting recommendations, and development and maintenance of Wildlife Management Areas.

Employees assisted the Fur and Refuge Division with alligator season. A total of 260 tags were issued and 167 alligators were harvested. Most of the harvest occurred in Concordia, Madison and Tensas Parishes. Permit applications were issued and a drawing held to determine hunters on public lakes and water bodies (Lake St. John, Lake St. Joseph, Lower Sunk Lake and Silver Lake along with Long Bayou).

Deer range surveys were conducted throughout the District. These give a better understanding of the deer herds and their relationship to the various range capabilities. Deer seasons and harvest recommendations are based on these surveys.

In 1991, 76 clubs, totaling 158,027 acres, were enrolled in the Deer Management Assistance Program (DMAP). A total of 2,623 antlerless tags were issued and $10,015.56 in fees were collected. A total of 2,678 deer were harvested, 1,147 bucks and 1,531 antlerless, for an average of 59 acres per deer. This project involved field investigations and formulation of sound deer management programs. Tags were issued to participants who could not harvest the recommended number of deer during the regularly scheduled either-sex hunts.

Turkey trapping operations were conducted on three WMAs. A total of 30 birds were caught and transported to their release sites.

District personnel assisted with other activities such as waterfowl enhancement projects, wood duck nest boxes and trapping, quail call routes and timber management. Nuisance animal complaints, such as, coyote, beaver, alligator, deer were received and reported to appropriate authorities. Employees worked with landowners to recommend management practices which would minimize damages.

Environmental assessments were made for various federal, state and parish projects proposed for the district. Meetings were attended relative to these projects and, when applicable, recommendations were made. Fish and wildlife losses were determined with appropriate mitigation measures being outlined in the recommended plan.

District personnel assisted the Department's land acquisition program. This involved attending meetings, habitat evaluations, assisting in appraisals, and making recommendations for the acquisition of several tracts.

Catahoula Lake management involved water level control for waterfowl food plant production, maintenance of maximum waterfowl numbers, minimizing lead poisoning losses, and optimum fisheries. A 1,100 acre waterfowl resting area and mudboat operation boundary was posted and enforced. The lake was regularly patrolled and all state and federal regulations enforced. Waterfowl bag checks conducted during the waterfowl season (implemented straight season) revealed hunter participation with 1.6 birds bagged per effort. Studies involving pintail and canvasback were initiated by the U. S. Fish and Wildlife Service with assistance by Department personnel.

District V. District V is comprised of eight parishes in the southwestern portion of the state. These are: Acadia, Allen, Beauregard, Calcasieu, Cameron, Evangeline, Jefferson Davis and Vermilion. The District V office complex is located in Lake Charles. This district maintains and manages two Wildlife Management Areas: West Bay located in Allen Parish and Sabine Island located in Calcasieu Parish.

Wildlife habitat across the district is diverse, ranging from extensive coastal marshes to natural prairies and vast agricultural areas to hardwood river and creek bottoms, to rolling hills of pine plantations or mixed pine-hardwoods. Due to this diversity, a variety of recreational hunting opportunities are available to the sportsman.

The leasing of lands for private hunting clubs continues to increase. As these clubs develop, many are enrolling in the Deer Management Assistance Program. District V enrolled 74 clubs into the DMAP program in 1991-92 comprising 164,417 acres of land; 788 antlerless deer tags were issued with 48% usage. A total of 816 deer were harvested (419 males and 397 females). Many clubs which have participated in the program for several years have improved the quality of deer herds while increasing total number of deer harvested.

A total of 290 hunters participated in the annual 1991-92 youth deer hunt on Wet Bay WMA with 11 deer being harvested (7 males and 4 females). We continued with an early either-sex season on the area. Opening weekend (Nov. 2-3) 3,625 hunters harvested 171 deer (88 bucks and 83 does). Approximately 230 deer were harvested during the entire deer hunting seasons on West Bay. The area also provides good squirrel and rabbit hunting and has become a favorite area for horse trail rides.

District employees assisted the Fur and Refuge Division with alligator season. A total of 63 commercial alligator hunting licenses were sold and 614 alligator tags issued. During this special alligator season, 30 non-resident alligator sport hunting licenses were sold. These hunters were from many states and Canada.

Other activities within the district included Canada goose surveys, selling of Canada goose licenses and monitoring of the Canada goose season, banding of wood ducks, maintaining wood duck boxes, goose collar surveys, turkey trapping and restocking, monitoring pheasant populations and hunting season success, nuisance animal complaints and crop damage complaints, deer range surveys, inspection of DMAP clubs, assisting in enforcement activities, WMA maintenance, hunter bag checks, quail route surveys, woodcock banding, lectures to civic groups, schools or hunting clubs, game breeder licenses, hunting preserve licenses, assisting the public with recreational and commercial licenses or rules and regulations and the issuing of special handicap permits.

District VI. District VI encompasses 13 parishes and one partial parish. It also includes the Atchafalaya Basin. There are six Wildlife Management Areas, one federal wildlife refuge and U. S. Army Corps of Engineers land within the district.

District VI personnel worked closely with 89 hunting clubs enrolled in the Deer Management Assistance Program. Approximately 228,000 acres were enrolled and 1,993 antlerless deer tags issued. Seventy-seven percent of the tags were used, resulting in the harvest of one antlerless deer per 150 acres.

An estimated 150,000 man-days of recreation were monitored on District VI Wildlife Management Areas. Approximately 33% of the man-days were devoted to deer hunting and resulted in 1,133 deer recorded harvested. Squirrel, rabbit and woodcock hunting were rated as good to fair, depending on the area.

Waterfowl hunter bag checks reflected a hunter success rate of 1.2 birds per hunter effort. Primary species include wood duck, mallard, and greenwing teal.

Turkey populations continue to grow and new areas are being occupied as populations expand.

Alligator surveys, harvest recommendations, and monitoring of harvest were conducted on Sherburne, Spring Bayou, and Grassy Lake WMAs. Tag issuance and monitoring of alligator harvest on private lands in Avoyelles Parish was also handled by District VI personnel. One hundred fifty-three tags were issued and 73% were used. Average size was 6.5 ft. and the largest was 12.0 ft.

A total of 787 wood duck nest boxes were monitored. Two hundred eighty-nine nesting hens were banded 149 hens were retrapped, and six hooded mergansers were banded. In addition, 292 wood ducks were trapped and banded by use of cannon net.

Wildlife food plots were planted on Sherburne, Grassy Lake and Pomme de Terre. Timber inventories, mast surveys, tree marking, seedling planting, and growth rate evaluations were also carried out on these areas.

A levee system with water control structures was erected on Sherburne WMA. This system is designed to trap run-off from the adjacent watershed and provide a 540 acre green-tree reservoir for resident and migratory waterfowl.

Routine daily activities of development, maintenance, and enforcement of rules and regulations on the Wildlife Management Areas were carried out.

District VII. District VII in southeast Louisiana is made up of 17 parishes, making it the largest district in the state. Wildlife habitat in these parishes is diverse, ranging from marshes and swamps to rugged loess bluff uplands. Most of the land is in private ownership with leased hunting rights. Seven Wildlife Management Areas are available for recreation.

During the 1991-92 deer season, hunting clubs and landowners enrolled 260,000 acres in the Department's Deer Management Assistance Program (DMAP). Biologists working with these cooperators recorded and documented data from 1,545 bucks and 1,691 antlerless deer . Data from these deer were analyzed and the information was used to identify needs and formulate management plans.

District VII personnel also participated in the wild turkey restoration program. Trapping efforts resulted in the capture of seven turkeys for relocation. The personnel working on the Ben's Creek WMA turkey study caught and released 32 gobblers and 20 hens on the WMA and surrounding private lands. A preliminary draft report of this study has been written and is furnishing needed information to assist biologists in turkey restoration and management.

Development and management work continued on Wildlife Management Areas as planned and documented in federal aid reports. Nearly 10,000 hunter interviews and bag checks were made on WMAs during the 1991-92 hunting season. Approximately 600 acres of stumps and brush were cleared on Sandy Hollow WMA area in preparation of an upland bird field trial course. Water control projects were advanced on the Joyce and Manchac WMAs. Approximately 6,500 acres on Sandy Hollow and Ben's Creek WMAs were control burned to enhance wildlife habitat. Alligator hunts were conducted on Pearl River, Joyce, and Manchac WMAs.

The federal wood duck banding project was aided by the capture of 175 wood ducks. Other projects included waterfowl inventory, deer disease and parasite studies, wood duck box program, wildlife plantings, and WMA law enforcement activities.

HABITAT CONSERVATION DIVISION

Louisiana continues to lose valuable fish and wildlife habitat to development projects of various agencies of federal, state and local government and to projects of private enterprise. Federal, state and local laws and procedures allow the Louisiana Department of Wildlife and Fisheries to review projects and evaluate the probable effects of the projects on fish and wildlife resources. The

Habitat Conservation Division's objective is to gather and compile data on fish and wildlife resources, their potential and their needs. The data are particularly important in the areas of human influence in order that the division be able to provide technical assistance to project planners and sponsors. Fish and wildlife resource information is essential to sound planning of land and water management projects and to proper decision making in various government programs.

Environmental Investigations Section

There are three primary government agencies involved in the work of the Environmental Investigations Section. The United States Army Corps of Engineers: both as a construction agency and a permitting agency the Corps has a need for fish and wildlife resource data from specific areas. The Corps is the principal agency promoting navigation and flood control projects in the state and its activities nearly always pose a serious threat to fish and wildlife. Further, the Corps is the permitting authority for projects in wetlands and adjacent waters of the United States.

Two agencies of the USDA -- the Soil Conservation Service and the U.S. Forest Service -- are required to review their projects in light of possible effects on fish and wildlife resources. They frequently need fish and wildlife data in project decision making.

A number of other agencies such as the FHWA, EPA, FFA, FHA, HUD, Louisiana Department of Transportation and Development, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, and the Louisiana Department of Culture, Recreation and Tourism often have need of fish and wildlife information for use in planning and decision making. Additionally, private developers and consultants who wish to apply for permits through some of the above r bodies are required to secure environmental information in order to comply with permitting requirements.

Some of the major projects investigated during FY91-92 were: freshwater diversion projects, hurricane protection levee projects, navigation projects, marsh management plans, airport construction, Community Development Block Grant projects, Farmers Home Administration projects, statewide flood control projects, solid waste disposal permits, hazardous waste disposal permits, hydropower projects, other types of dam projects, coastal erosion and restoration projects.

Over 1,100 Coastal Use Permit and 404 Permit applications, and numerous requests for information from both government and the private sector on matters related to fish and wildlife were handled.

Research and Survey . Section personnel conducted or participated in field trips and meetings and reconnaissance surveys on all 51 scenic rivers. The section also completed evaluation surveys of two streams nominated for inclusion in the system.

The Scenic Rivers Program received a grant in the amount of $116,000 from the Environmental Protection Agency to be used for Multi-Objective River Corridor Management Planning on 12 scenic rivers. Six Scenic River Plans were completed.

In other research projects, several habitat evaluation field trips were conducted during the FY in conjunction with major land modification projects. Most other research was limited to literature searches.

Permitting. The workload pertaining to the evaluation of permits in the state is divided into three major categories: scenic rivers, fill material permits, and mariculture permits.

The scenic river staff reviewed 15 permit applications, issued ten 10 permits and revised one. Four are pending.

The Environmental Investigations Section reviewed and issued five fill material permits for removal of fill from the Mississippi River. Additionally, staff reviewed and requested payment of fill royalty in the amount of $90 from individual fill material removal projects.

The permitting section continued to monitor stocking and harvest of fish by permittees. The monitoring consisted of receiving reports via WATS and receipt of monthly and annual reports from permittees.

Louisiana Natural Heritage Program

Of the 895 vertebrate species in Louisiana, 87 percent are nongame. That is, they are not hunted, fished or trapped. The Louisiana Natural Heritage Program (LNHP) conducts ongoing research on these species with specific emphasis on rare, threatened and endangered (r/t/e) plant and animal species and significant natural areas. Data concerning the status and distribution of r/t/e/ species and natural areas are maintained in computer and manual files, indexed by numerous fields, creating a flexible database that can respond to a wide variety of user needs.

The Natural Heritage Program provides information and management suggestions to public and private policy-makers and is consulted prior to Department decisions on Coastal Management Division, Corps of Engineers, Department of Transportation and Development, etc. permits. Additionally, the Natural Heritage Program works closely with the Louisiana Nature Conservancy to protect priority sites throughout Louisiana. The primary objectives of the LNHP are:

1) To gather information systematically and on a continuing basis on the occurrences of r/t/e species and significant ecological features of the state, including outstanding examples of native ecosystems and critical areas benefiting the environment.

2) To assemble and store this information efficiently in our data management system.

3) To make data retrieval utilitarian and cost-effective so that the potential impact of various activities on identified lands can be evaluated.

4) To set rational conservation plans to conserve the state's biological diversity.

Map files, manual files and computer files keep information well-organized and easily accessible. Records are indexed by name, location, status, watershed and land ownership, creating a flexible user-request system. The LNHP provides practical, up-to-date information to public and private policy makers. Applications of the database have been used in virtually every aspect of biological conservation.

The database also includes information on 251 managed areas within the state as well as over 2,500 source abstracts. In previous years the LNHP developed the first statewide natural community classification system with seven natural community systems containing 75 distinct communities. The LNHP has located high quality examples of more than 85 percent of the communities with a state rank of S1-S3 (endangered-rare). Over 1,800 sites statewide have been surveyed for r/t/e species and unique natural communities by the Heritage staff. These sites represent habitat for over 200 state-r/t/e species of plants and animals. Of the 3,983 computerized records in the database, 1,369 represent occurrences of r/t/e animal species, 1,683 records are r/t/e plant species occurrences and 574 represent occurrences of unique natural communities. Additionally, the location of more than 300 wading and seabird colonies are mapped in the database.

The LNHP administers the Section 6 cooperative agreement with the U. S. Fish and Wildlife Service which improves our ability to manage federally listed animals. Through this agreement, the federal government reimburses the state for up to 75 percent of the cost of endangered species research and management. Current research projects include studies on gopher tortoise, Louisiana pearl shell and black bear.

Besides nongame inventory work and research, the LNHP staff has reviewed for their effects on nongame wildlife hundrds of proposed federal, state, parish, municipal and privately funded projects. In doing so, the LNHP has protected numerous sites housing r/t/e species and unique habitats statewide, and, at the same time, saved industry money through early planning of proposed activities. In addition to reviewing projects that require permits, the LNHP is responsible for issuing permits for scientific collecting, nuisance animal control and wildlife rehabilitation.

Land protection efforts of the LNHP have also been very productive. Act 324 of the 1987 legislative session created the Louisiana Natural Areas Registry Program as one method of protecting significant areas throughout the state. The owner voluntarily agrees to manage the area according to a management plan developed by the LNHP staff. The Louisiana Nature Conservancy has been contracted to administer the program. To date, some 48 sites incorporating more than 32,375 acres in 24 parishes have been registered as important natural areas. This includes over 4,900 acres of public lands and more than 32,300 acres of privately owned lands.

Other major accomplishments of the Natural Heritage Program include:

1) Published the booklet Louisiana's Hummingbirds. Distributed 10,000 copies and began a second printing of the booklet.

2) Coordinated 37 breeding bird surveys. Conducted quarterly surveys of pelagic seabirds. Initiated shorebird counts on Catahoula Lake in LaSalle Parish.

3) Served as department representatives on the Black Bear Conservation Committee, Red-cockaded Woodpecker Conservation Committee, Stewardship Forest Services Committee, Freshwater Mussel Task Force and the Reptile and Amphibian Task Force.

4) Continued an ongoing three-year survey of the natural communities of Kisatchie National Forest. Began an ongoing survey of r/t/e species and unique natural communities on Fort Polk Military Installation.

5) Established a mitigation banking program with the Nature Conservancy and other state and federal resource agencies to mitigate the loss of pine flatwood wetlands in Southeast Louisiana, particularly wet longleaf pine savannahs, a rare natural community in that area of the state.

6) Conducted status surveys for several rare plants and animals for U.S. Fish and Wildlife Service to assist with its determination as to whether listing as threatened or endangered is warranted.

7) Continued work on an Atlas of the Flora of Louisiana.

8) Initiated a multi-year survey of Chandeleur Island avifauna for the U.S. Fish and Wildlife Service.

9) Made presentations at various conferences and symposiums including the Kisatchie National Forest Ecosystem Management Conference, contacted landowners to promote habitat and rare species conservation. Conducted numerous surveys for rare plant and animal species and outstanding natural habitats. Spearheaded the acquisition and establishment of a new conservation area in St. Tammany Parish, Lake Ramsey Savannah WMA. Cooperated with the Louisiana Nature Conservancy in various conservation projects. Assisted the Louisiana Forest Stewardship Program with the property inspections and the development of a management plan.

10) Initiated surveys on birds in the Gulf of Mexico .

Office of Fisheries

MARINE FISHERIES DIVISION

The Marine Fisheries Division is charged with the management of Louisiana's marine resources. The division is comprised of the Shellfish, Mollusc, and Finfish sections and the Sport Fish Restoration Program.

Shellfish Section

Shrimp Seasons. During FY 91-92, the Marine Fisheries Division collected fishery independent trawl samples throughout coastal Louisiana. Data from these samples were used to set season frameworks for both fall and spring inshore shrimp seasons. This is an ongoing program which provides a means of determining opening and closing dates for the harvest of shrimp.

The 1991 fall inshore shrimp season was set to open at 6 a.m. on August 19, 1991 in all three management zones. The season continued into December, 1991. The annual meeting to set the spring inshore brown shrimp season was held at the University of New Orleans on May 7, 1992. Technical data from the shrimp sampling program was presented to the Wildlife and Fisheries Commission. The data, presented in conjunction with public comment, enabled Commission members to set opening dates for each of the management zones. Zone 2 opened at 6 a.m. May 18, 1992, Zones 1 and 3 opened at 6 a.m. June 1, 1992. Although environmental conditions associated with shrimp production seemed to indicate the potential for good catches, landing data revealed that shrimp production for the 1992 spring season had a very poor start.

Shrimp Management Plan. Marine Fisheries Division personnel worked on the Shrimp Management Plan. A portion of the work associated with the plan was contracted to the Louisiana State University Center for Wetland Resources.

LSU's portion of the plan was submitted to the Department and distributed for public comment in May 1992. Final completion of the plan is scheduled for the early part of 1993.

Shrimp Task Force. The Marine Fisheries Division provided technical support to two industry task forces. The Shrimp Task Force was established by Gov. Edwin Edwards in March, 1992. The Shrimp Task Force has representatives from all phases of the shrimp industry from across coastal Louisiana. The Task Force has been meeting to address problems facing the future of the Louisiana Shrimp Industry.

Crab Task Force. The Department's Crab Task Force had five meetings during fiscal year 1991-92. A major accomplishment of the Crab Task Force during this period was the recommendation of a tagging system for crab traps and passage of two bills during the legislative session. One bill repealed the 4.5 inch minimum size regulation on soft shell crabs while the other defined buster crabs and required that buster crabs held for shedding must be kept separate from other crabs.

Other topics discussed by the Crab Task Force during meetings included limited entry, zoning of crab laws, 1991 legislation, task force vacancies, and other issues.

Mollusc Section

Oyster Seasons. The 1991/92 oyster season on most public oyster seed grounds, except for Calcasieu Lake, and Sabine Lake, began 1/2 hour before sunrise on October 1. The Bay Gardene, Bay Junop, and Hackberry Oyster Seed Reservations also opened at that time.

The Bay Gardene, Bay Junop, and Hackberry Bay Reservations were closed 1/2 hour after sunset October 11. As scheduled, the Sister Lake Reservation was closed during this season.

The season was delayed until December 1 in two areas of the public seed grounds, due to the set of young oysters. These areas included portions of Breton Sound, Vermilion Bay, and West Cote Blanche Bay.

Public grounds in Calcasieu and Sabine Lakes opened 1/2 hour before sunrise October 15 and remained open through April 30. This season was extended after April 1 because resources were still available and heavy rainfall in January, February, and March resulted in many health closures. Gear was restricted to tongs only. Provisions were made to prohibit the harvest if the Department of Health and Hospitals declared those waters closed to shellfish harvesting.

Lease Auction. An auction of all delinquent oyster leases was held March 26, 1992. The auction included oyster leases on which rent was delinquent. Opening minimum bid for each lease was rental and penalty due.

The moratorium for taking oyster lease applications established by the Louisiana Wildlife and Fisheries Commission in April, 1978 was lifted on September 9, 1992.

Finfish Section

The major objective of the finfish section is to develop and maintain a database of scientific information used to make rational recommendations for the management of coastal finfish stocks.

Preliminary "Biological and Fisheries Profile" documents have been developed for the following species: spotted seatrout, red drum, black drum, striped millet, southern flounder, Atlantic croaker, spot, cobia, king and Spanish mackerel, red snapper and several grouper species.

These profiles include: nomenclature, taxonomy, morphology, distribution, reproduction, nutrition and growth, behavior, environmental tolerances, habitat and directed fishing activities. Some of these profiles are currently being updated and expanded and will be used as source documents for the development of individual Fishery Management Plans (FMPs).

The FMP for black drum has been completed and is being used as a basis for management of black drum Final drafts of the spotted seatrout and red drum FMPs have been produced, reviewed by external referees, and presented to the Legislature and the Wildlife and Fisheries Commission.

The spotted seatrout FMP has also been reviewed by the Marine Fisheries Panel. Drafts of the biological fishery profile sections of the FMPs have been produced for sand seatrout and sheepshead, and these are in the process of inhouse review.

Monitoring. A comprehensive monitoring program was developed in 1985 to protect or enhance these valuable resources by providing information regarding the status of fish stocks that occur in the coastal waters of Louisiana at some time during their life cycle. Three gear types are used coastwide to sample various year classes of estuarine dependent fish.

A bag seine is used to sample young of the year and provide information on growth and movement. The seine is 50' in length, 6' in depth and has a 6' x 6' bag as an integral part of and midway the length of the net. The mesh size for this seine is 1/4" bar, 1/2" stretched, Delta 44 knotless mesh.

A gill net is used to sample juvenile, sub-adult and adults and provide information on relative abundance, year class strength, movement and gonadal condition. The gill net is 750' in length, 10' in depth and constructed of monofilament. The net is composed of five panels, each of the following mesh sizes: (1) 150' x 10', 1" bar, 2" stretched mesh, 0.4 mm diameter filament; (2) 150' x 10', 1 1/4", 2 1/2" stretched mesh, 0.52 mm diameter filament; (3) 150' x 10', 1 1/2" bar, 3" stretched mesh, 0.52 mm diameter filament; (4) 150' x 10', 1 3/4" bar, 3 1/2" stretched mesh, 0.52 mm diameter filament; and (5) 150' x 10', 2" bar, 4" stretched mesh, 0.52 mm diameter filament.

A trammel net is used to provide information on relative abundance, standing crop and movement. The trammel net is 750' in length, 6' in depth and constructed of nylon. The entire net has a 2:1 sag, and the mesh sizes are: inner wall - 1 5/8" bar, 3 5/8" stretched, number 6 twine; outer wall - 6" bar, 12" stretched, number 9 twine.

Gill net samples are taken semi-monthly, trammel net samples are taken monthly during October through March and seine samples are taken monthly. Hydrological readings (conductivity, salinity and water temperature) are aken each time a biological sample is taken. Also, estimates of cloud cover, sea state, tide, wind direction and speed are taken each time a biological sample is taken.

Samples are taken at specific locations arranged to cover the beach, mid-marsh and upper marsh major bay systems throughout coastal Louisiana. The catch and hydrological information is summarized for each coastal area on a monthly basis to give the resource managers nformation as to the current condition of resource. The pertinent life history information for important species is also used in developing analytical and predictive models.

Spotted Seatrout. The commercial harvest of spotted seatrout in territorial waters was halted at Midnight, August 2, 1991. Closure prohibited the commercial harvest, purchase, barter, trade and sale of spotted seatrout taken from Louisiana waters, but did not prohibit dealers from possessing spotted seatrout legally taken prior to the date of closure if appropriate records were maintained. Commercial harvest was suspended because technical projections ndicated that the 1.25 million pound annual quota mandated by the Legislature had been reached. Commercial mesh size for gill nets, trammel nets and seine nets other han strike nets were increased to a minimum of 4 1/2 nches once the commercial spotted seatrout quota was eached.

The commercial harvest of spotted seatrout was eopened September 1, 1991. New rules were enacted in February, 1992, discussed below, and the harvest was closed on May 1, 1992. Preliminary landings data indicate otal landings of 781,036 pounds of spotted seatrout.

Legislation enacted in 1988 set the commercial quota at 1.25 million pounds per year with the commercial spotted seatrout season beginning September 1 each year. Once the quota is reached, no vessel possessing or fishing any seine net, gill net, trammel net or hoop net is allowed o have a spotted seatrout aboard. The commercial fishery operated under a 14-inch minimum size limit and the ecreational fishery under a 12-inch minimum size limit. Recreational fishermen were also governed by a 25-fish per day bag and possession limit. All fish are required to have head and caudal fin (tail) intact when put ashore from a vessel or when sold.

Legislation passed in 1991 gave the Wildlife and Fisheries Commission authority to set sizes, possession imits, seasons, times, places and quotas for all marine fish species, including spotted seatrout. These rules are to be based on biological and technical data with the objective of conservation and management for maximum benefit to the state without overfishing that leads to biological damage to the species.

In February, 1992, the Commission promulgated rules for commercial harvest of spotted seatrout. These rules reduced the commercial quota to 1.0 million pounds, set the commercial season to run from September 15 of each year until 12:01 am May 1 the next year, and prohibited commercial take from sunset Friday through sunset Sunday during open season. If the quota is reached or predicted to be reached prior to May 1, the season is closed at that time.

HCR 211 of the 1992 Regular Legislative Session nullified that part of the Commission rule pertaining to weekend closures.

Menhaden. Annual forecasts for the Louisiana menhaden fishery have been made since 1982. A meeting was held with menhaden industry personnel in March, 1992 to present the 1992 harvest forecast using multiple regression predictive models. Anticipated 1992 fishing effort, juvenile menhaden indices, environmental factors, and other commercial harvest statistics were used as input data.

A forecast was made for a below average or average 1991 year class (age-1's in 1992) and 1990 year class (age-2's in 1992). The projected Louisiana menhaden landings were in the 350,000 to 400,000 metric ton range, which was considerably lower than recent harvest levels.

The Department's annual forecasts could not be made until one or two months prior to the season opening in mid-April because juvenile menhaden indices were based upon January/December data for the preceding year. To maximize benefit of a forecast, adequate lead time must be given to allow industry personnel to respond to year-to-year harvest fluctuations with appropriate fishing, processing, and marketing strategies. Plans were begun for a comprehensive research project to improve the Department's forecasts. Objectives of this research are to: (a) develop new juvenile menhaden indices that allow for earlier, more accurate forecasts; (b) investigate the influence of environmental factors on average weight of menhaden; and, (c) provide estimates of resource abundance rather than harvest.

Black Drum. A fishery management plan for black drum has been completed and implementation began in early 1990. Permanent rules, effective September 1, 1990, established a recreational minimum size limit of 16 inches total length with possession of no more than one over 27 inches total length. The recreational daily creel limit and possession limit was set at five. The commercial fishery is required to operate under two annual quotas. A quota of 3.25 million pounds was established for 16 inch to 27 inch fish and a 300,000 fish quota for fish over 27 inches. Commercial fishermen who harvest black drum over 27 inches are required to possess an annual "Special Black Drum Permit" and are required to report monthly the number of black drum taken the previous month. The fishing year was established as September 1 to August 31.

Commercial harvest figures for black drum over 27 inches are obtained from black drum permit reports by commercial fishermen. Harvest of 16 to 27 inch black drum is obtained from wholesale-retail dealer landings reports, after adjusting for their bull drum landings.

From September 1991 through August 1992 (Fishing Year 91/92), preliminary estimates of bull drum harvest indicate 93,056 drum over 27 inches were harvested. This compares to a harvest of 104,506 in Fishing Year 90/91.

Mullet. There were very few regulations on the recreational or commercial harvest of mullet in Louisiana prior to 1991. Act 960 of the 1991 Legislature required the Wildlife and Fisheries Commission to promulgate rules for harvest of mullet, and set temporary rules until such rules were promulgated. These rules established a season for the taking of mullet without limit from October 15 and running 90 days to January 12 of the following year. It set a daily limit of 200 pounds of mullet outside of that season. It required a permit for commercial harvest, with a cost of $100 for residents and $400 for non-residents.

At the February 1992 meeting of the Wildlife and Fisheries Commission, mullet fishermen expressed their concern that regulations passed by the Legislature were preventing them from harvesting mullet in reasonable quantities due to the low daily limit outside of the fall/winter season. The Commission passed emergency rules at that meeting, lasting 120 days until June 5, 1992, to set the limit on daily take at 1,500 pounds. These rules were extended through further emergency action and permanent rules are presently being promulgated through the Administrative Procedure Act. As presently drafted, these rules will provide for a "roe" season, between October 15 to January 14, with no daily take or possession limit for permitted commercial fishermen. A "non-roe" season would be set to run from January 15 to September 14, with a daily take and possession limit of 1,500 pounds. From September 15 to October 14, a "pre-roe" season would be set, with a daily take and possession limit of 200 pounds.

Sport Fish Restoration Program

In 1991, Louisiana used marine sport fish restoration funds in two activities; development of boat ramps to create access for fishermen, and a study on the use of flourochromes for marking fish. Funds were provided to LSU through an interagency agreement to develop a method whereby large numbers of fish could be reliably tagged for experimental releases.

INLAND FISH DIVISION

Fisheries Section

Striped Bass/Hybrid Striped Bass. The striped bass/hybrid striped bass program was initiated to control overabundant gizzard shad populations in certain waterbodies, to provide a new fishery, and to re-establish striped bass populations that historically occurred in coastal streams but disappeared sometime in the 1950's to mid 1960's. Through judicious stocking efforts, striped bass populations and resultant fisheries have been established or re-established in most coastal rivers. A project was conducted in 1992 to sample the Mississippi and Atchafalaya Rivers for presence of striped bass larvae and fingerlings. Both larvae and fingerlings were found, providing proof that the species is once again naturally reproducing in state waters. A nationally known striped bass fishery has been established in Toledo Bend Reservoir. During 1992, the section stocked 185,934 striped bass fingerlings in the Calcasieu River, and 668,056 in Toledo Bend Reservoir. A total of 105,000 hybrid striped bass fingerlings were stocked in 5 Louisiana public lakes.

Fish Hatchery Production & Stocking Program. There are three state owned fish hatcheries located in Monroe, Forest Hill and Lacombe. These hatcheries contain 40 ponds totalling 38 surface acres. The primary purpose of the hatcheries is to produce Florida largemouth bass fingerlings and to a lesser extent hybrid striped bass fingerlings. This year's fingerling production was 781,436 Florida largemouth bass, 105,000 hybrid striped bass, 1000 flathead catfish, 66,552 channel catfish and 26,600 coppernose bream. Through cooperative efforts and trade-off agreements with the U.S. Fish and Wildlife Service, Louisiana received for stocking in public waterbodies 713,779 Florida largemouth bass fingerlings, 668,056 striped bass, 99,168 channel catfish and 28,207 blue catfish from federal fish hatcheries. An additional 404,150 largemouth bass were purchased from Southern Fisheries at Gordo, Alabama. Finally, 16,000 threadfin shad were procured from the Cross Lake Fish Hatchery and stocked in Chicot Lake to supplement the forage base for the on going Florida largemouth bass managment project.

Florida largemouth bass stockings proved successful in the last year. Ten largemouth bass over 12 pounds were caught. A new state record largemouth bass was caught on June 6, 1992 weighing 15.38 pounds.

The Fisheries Section maintains and operates a striped bass/hybrid striped bass fry production facility in the Toledo Bend Research Station located on Toledo Bend Reservoir. The 1992 production at this site was 17,922,000 striped bass fry, and 2,177,000 striped bass/white bass hybrid fry.

FISH STOCKING RECORD
July 1, 1991 - June 30, 1992

WATERBODIES	NUMBER
FLORIDA LARGEMOUTH BASS	
Allen Parish Correctional	2,724
City of Baker	500
Bartholomew	81,287
Black Bayou	40,490
Boeuf Lake	16,000
Caney Lake	427,248
Chicot Lake	170,221
Concordia Lake	101,894
Cross Lake	4,222
False River	326,379
Fort Polk	5,000
Indian Creek	1,200
Rodemacher	214,512
Toledo Bend	133,350
Turkey Creek	150
University Lake	4,000
Vernon Lake	339,108
STRIPED BASS	
Toledo Bend	668,056
Calcasieu River	186,000
HYBRID STRIPED BASS	
Bayou Desiard	25,000
Crooked Creek	5,000
Lake Bruin	25,000
Lake Concordia	10,000
Lake St. John	20,000
Spring Bayou	20,000
CHANNEL CATFISH	
Saline Lake	40,570
Cross Lake	66,552
Indian Creek Lake	20,000
Kincaid Lake	20,000
Sutton Lake	10,034
Eunice Lake	2,508
University Lake	5,016
Baton Rouge Police Lake	760
Calcasieu River	280
BLUE CATFISH	
Saline Lake	15,609
Indian Creek Lake	5,049
Kincaid Lake	5,049
Bayou Roberts	500
Kiwanis Lake	2,000
FLATHEAD CATFISH	
Crooked Creek	850
Eunice Lake	150
COPPERNOSE BREAM	
Allen Parish Correctional	15,000
Turkey Creek	1,500
Kiwanis Lake	10,100
THREADFIN SHAD	
Chicot Lake	16,000

Farm Pond Extension Program. The farm pond program is designed to give technical assistance to farm pond and small lake owners for proper management to obtain maximum sport fish production and quality fishing success. Requests for aid were submitted by telephone, correspondence or personal interviews. Technical advice was submitted to the owner by telephone, correspondence or at the actual pond site. Technical advice was afforded to the owners of 716 ponds totalling 4439 surface acres. Average pond size was 6.20 surface acres.

Fish Parasites and Disease Studies. From July 1, 1991 to June 30, 1992, eighty cases were submitted to the Louisiana State University Aquatic Animal Diagnostic Lab under the Louisiana Cooperative Fish Disease project. Fifty-one cases involved sport fish from private ponds or public waters, five involved hybrid-striped bass from the state's cooperative research project on hybrid striped bass production, and twenty-four involved miscellaneous wild fish from fish kills across the state.

All records have been logged into our computer data base and information on species and etiology have been transmitted to the Fish Disease Committee of the Southern Region of the American Fisheries Society for compilation with the data from the other southern states.

In addition to disease diagnostic work, personnel in the diagnostic laboratory participated in several state, regional, and national workshops and conferences on fish health, including the national AFS Fish Health Section Meeting in Auburn, Alabama. A weekly case review to discuss diseases encountered and the control or management of diseases has been instituted.

Louisiana/Texas Toledo Bend Reservoir Survey. Louisiana and Texas agreed in 1988 to conduct a joint survey on Toledo Bend Reservoir's fish populations. Both states continue to monitor fish populations at Toledo Bend Reservoir through electrofishing, gill net and frame net sampling, seining and rotenone sampling. Electrofishing surveys for black bass from both states show a significant increase in catch-per-hour statistics in the past several years. Numbers of bass from 14-17 inches caught by recreational anglers have also increased in the past two years. Both states also continue to stock pure Florida strain largemouth bass into the Reservoir on an annual basis. Genetic testing has shown Florida bass appear to be thriving in Toledo Bend. Bass over 15 pounds should show up in 1993 or 1994. A 13.85 pound bass was caught in March, 1992, and was verified as a pure Florida strain. Both states are also doing age-and-growth work on crappie at this reservoir.

Lake and River Standardized Sampling. A total of 65 waterbodies were intensively surveyed using rotenone, electrofishing, netting or seining or a combination all methods. Data were entered in a program and analyzed using standardized SAS programs. Population estimates using rotenone target all species of fish and yield standing crop estimates. Estimates are taken from the same area each time the water body is sampled. Electrofishing targets largemouth bass and crappie with samples taken in both fall and spring. Electrofishing time is predetermined by standard sampling procedures. Monofilament gill nets are used to determine relative abundance of gizzard shad, striped and hybrid striped bass and commercial species. Nets were fished in different zones in each waterbody to survey various habitats. Seine samples are designed to yield information regarding young-of-the-year and recruitment. Specific samples are taken at certain points each year. Creel surveys which yield information such as catch per unit effort and fishing pressure were conducted on 5 waterbodies.

Chicot Lake Project. A comprehensive study of largemouth bass in Chicot Lake in Evangeline Parish was initiated in 1988 and completed in June 1991. The goal was to produce greater numbers of 3-5 pound bass and possibly to produce greater numbers of "trophy" size bass. As a result, Chicot Lake has been designated as a "Quality Lake" within the Louisiana Black Bass Fishery Management Plan. Presentations were made to citizens groups and bass clubs to inform them of new regulations and the reasons for them. Statistical analysis of the fish population and creel data collected during the study has been completed and the final report is nearing completion.

Fish Kill Investigations. Numerous fish kills were surveyed. Major kills were checked in conjunction with the Department of Environmental Quality and the Department of Agriculture. The Department's role in surveying fish kills is to determine species and number of each killed. Results of these tabulations are then calculated for civil penalty applications.

Bowfin Studies. A study of the potential impacts of the caviar fishery on Louisiana bowfin populations was initiated during the fall of 1990. It was determined that most bowfin spawn at least once before reaching 22" total length, the average size of bowfin taken with 3" bar mesh gillnets. Results of the bowfin project were presented at the 1991 Southeastern Association of Fish and Wildlife Agencies. Collection and analysis of bowfin data will continue as part of the standardized sampling procedures. A bowfin management plan is to be completed in the next fiscal year.

Catfish Investigations/Southern Louisiana. A channel catfish study was initiated in 1988 to determine annual standing crop, age and growth, sexual maturity and gear selectivity in Lake Verret, Lake Palourde and Lake Fausse Point. Data analysis and final reports have been completed.

In 1,033 net days, a total of 10,257 channel catfish were caught in hoop nets with 1, 1 1/8, and 1 1/4 inch mesh netting, and with 1 inch mesh nets modified to include 1 1/4 or 1 5/8 inch escape rings. The 1 inch mesh nets had significantly higher catch rates than the 1 1/4 inch mesh nets. The nets with 8 small rings caught significantly more fish than the nets with 8 large rings. The 1 1/4 inch mesh nets caught 6.9% channel catfish less than or equal to 10.8 inches while 67% of the catch in 1 inch mesh nets were less than or equal to 10.8 inches. It appeared that 1 inch and 1 1/8 inch mesh netting retained channel catfish when they reached 9 inches in total length. The 1 1/4 inch mesh nets retained channel catfish that were 10.9 inches and greater in total length. The nets with 1 1/4 inch escape rings did not release fish that were over 9 inches in total length and the 1 5/8 inch escape rings retained channel catfish when they reached 10 inches. Age-one channel catfish from Lake Verret (7.2 inches) were significantly longer than Age-one channel catfish from both Lake Palourde (6.3 inches) and Lake Fausse Point (5.9 inches). The total length at which 50% of the male channel catfish in Lake Verret are sexually mature is 12.6 inches versus 11.1 inches for female channel catfish. There was no significant difference in total length between male and female channel catfish in either Lake Palourde or Lake Fausse Point. The

50% level of sexual maturity for channel catfish in these akes was 11.8 inches and 11.2 inches respectively.

Statewide White and Black Crappie/ Age & Growth. The Toledo Bend Research Facility is being utilized for a statewide crappie age and growth study, in which otoliths (bony structures on the head) are analyzed for growth patterns. In 1992, over 800 otoliths from Toledo Bend Reservoir, Lake Bistineau, Bussey Brake Reservoir, Sibley Lake, Cocodrie Lake, Larto Lake, Old River, and Henderson Lake were analyzed for growth patterns with a microscope and ocular micrometer, then run on a computer age-and-growth program for back-calculation of ages. Data have shown a faster rate of growth for white crappie as compared to black crappie, although black crappie appear o be more abundant in Louisiana. Growth rates for black crappie at Toledo Bend and Bistineau are remarkably similar. Growth rates in river overflow areas such as Henderson and Larto Lakes and Old River are much more variable, perhaps since crappie (and other fishes) in these areas are prone to "feast and famine" conditions brought about by annual flooding.

Survey of Paddlefish Stocks. The Fisheries Section continued monitoring paddlefish populations throughout Louisiana waters. Baseline data on relative abundance, age and growth and fecundity were collected. An adult paddlefish tagging program was initiated at the Old River Control Complex and continued in the Lake Pontchartrain and the Mermentau River basins. Information from tag eturns will enable biologists to determine seasonal movements and estimate population sizes.

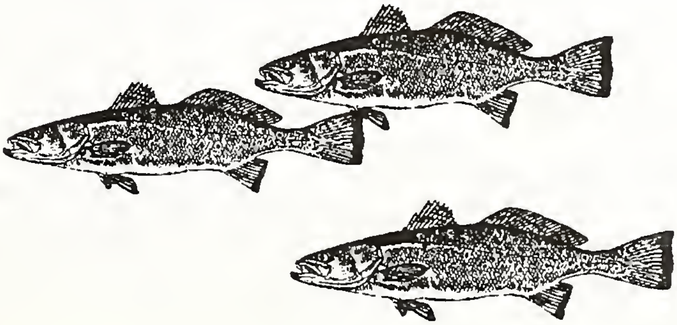
Paddlefish were artificially propagated again in during 1992. Working cooperatively with the U.S. Fish and Wildlife Service, biologists collected broodstock from the wild, and successfully spawned seven female paddlefish at he Natchitoches National Fish hatchery. A total of 1.1 million eggs were removed and fertilized by fisheries experts. Eggs were incubated at the National Fish Hatchery where hatching success and fingerling survival was poor.

Survey of Sturgeon Stocks. The Fisheries Section continued a status survey of the Gulf sturgeon in 1992 to determine the presence and abundance of this rare species n the Lake Pontchartrain drainages and the Pearl River system. Fisheries Section and commercial fishermen sightings of Gulf sturgeon were added to a much expanded data base during the year. A Department biologist was assisted a team of state and federal fisheries biologists in preparation of a recovery plan for the Gulf sturgeon. A draft plan is due in early 1993 for technical review. Status surveys and routine monitoring will continue for this species in upcoming years.

Status and distribution studies of sturgeons inhabiting the Old River Control Complex were begun in 1992. This study, funded by a private utility company, is focusing on the endangered pallid sturgeon and its more common cousin, the shovelnose sturgeon. Biologists identified a total of 11 pallids. This represented one of the largest concentrations of this species in recent times, including some of the smallest specimens ever collected from the wild. Tissue samples will provide the Department and the U. S. Fish and Wildlife Service with very important answers as to genetic makeup of southern sturgeon stocks. Additionally, the study will provide scientists with information about habitat usage and life history. A draft recovery plan for this species was completed by the National Recovery Team in 1992.

Yo-Yo and Trigger Catch Investigations. A study was conducted to determine the catch and mortality rates of fish caught on unattended yo-yos and unattended triggers. Gears were fished in close proximity in 5 impoundments a total of 825 nights per gear. The catch rate for all species was 0.170 fish/yo-yo night and 0.08 fish/trigger night. Largemouth bass catch rates were 0.005 fish/yo-yo night and 0.002 fish/trigger night. Mortality of all fish caught on unattended yo-yos and unattended triggers was 61% and 7%, respectively. Four largemouth bass were caught on unattended yo-yos; all died. Two were caught on unattended triggers, both survived. Results of this study indicate that because catch rates are extremely low, there is no biological reason to place restrictions on unattended yo-yos or unattended triggers.

Public Access and Boating Facilities. Objectives of this project are to provide for development and maintenance of fishermen access areas such as boat ramps, fishing piers, bank access and structural modifications to provide improved hydrological conditions for improvement of fisheries. In addition to the 41 boat ramps for which the Inland Fish Division has inspection and maintenance responsibilities, the Division has 23 additional projects in various stages of development and planning. Of the Wallop-Breaux monies available each year in Louisiana, a minimum of 10% must be spent on access and development projects in fresh and saltwater areas. Most projects are completed with a combination of Wallop-Breaux funds and in-kind match by the project sponsor, with little or no expenditure of conservation funds on these projects.



WALLOP-BREAUX PROJECTS

PROJECT	STATUS	FED SHARE
Lake Verret Ramp	Complete	$ 78,120
Bayou Vermilion Ramp	Complete	$ 399,218
Lake Dauterieve Ramp	Complete	$ 88,723
*Mandeville Harbor Ramp	Complete	$ 193,338
Cotile Lake Ramp	Complete	$ 56,250
Belle River Ramp	Complete	$ 139,503
Bayou Benoit Ramp	Construct	$ 139,725
Krotz Springs Ramp	Complete	$ 85,383
Cross Lake Ramp	Complete	$ 147,148
Bayou Bonne Idee Ramp	Complete	$ 15,000
*Clovelly Canal Ramp	Complete	$ 295,000
Caddo Lake Piers	Complete	$ 32,104
Iatt Lake Landing	Complete	$ 30,000
Buhlow Lake Landing	Complete	$ 37,500
Cotile Lake Buoys	Complete	$ 20,000
*Lake Palourde Marina	Complete	$ 205,125
*Bonnet Carre Spillway	Complete	$ 179,550
Grand Bayou Reservoir	Construct	$ 146,691
Spanish Lake Work	Continue	$ 164,500
City Park Lakes Work	Planning	$ 225,000
Bayou Pigeon Ramp	Complete	$ 62,325
Toledo Bend Boat Lane #1	Complete	$ 142,000
Sutton Lake Ramp	Complete	$ 30,000
*Freshwater Bayou Ramp	Construct	$ 116,450
*Fort Pike Ramp	Planning	$ 112,500
Schooner Bayou Ramp	Complete	$ 79,275
Upper Grand River Dock	Complete	$ 18,750
Bayou Sorrel Dock	Complete	$ 30,000
Toledo Bend Phase II	Complete	$ 136,000
*Quintana Landing Work	Construct	$ 36,000
Bayou Des Allemands Ramp	Planning	$ 108,750
Lake Bouef/Theriot Canal Boat Ramp	Planning	$ 23,200
False River Boat Ramp	Planning	$ 111,318
Bayou Francois Ramp	Planning	$ 16,200
Indian Creek Reservoir Channel Marking	Planning	$ 21,177
Bayou DeSiard Boat Ramp	Planning	$ 37,637
*Quintana Canal Boat Ramp Phase II	Planning	$ 138,200
*Texaco Canal (Golden Meadow)	Planning	$ 15,000

*MARINE PROJECTS

Cooperative Fish Projects with LSU. The Inland Fish Division's "Water Body Management Plan" has been completed. These procedures standardize the method of collecting data in freshwater systems. It details methods of using various gears and the data that will be obtained from each type of sampling. Data storage and analysis has also been standardized. The results of these sampling efforts will be annual reports that present data gathered from each waterbody.

Genetic analysis to determine subspecies of largemouth bass has been conducted in 11 Louisiana waterbodies. Lakes have shown varying degrees of success with introduction of the Florida subspecies. Age and growth analyses were completed in 17 Louisiana lakes. Age and growth analysis will be repeated every three years in trophy and quality lakes and as needed in other water bodies.

A second cooperative mail survey between the Department and LSU to Louisiana recreational anglers, both fresh and saltwater was completed in 1991. Nine thousand six hundred and two survey forms were mailed. Three thousand seven hundred survey forms were answered, resulting in a 41% return rate. This material has been published in report form.

Aquatic Plant Research and Control Section

Water Hyacinth Control Program. The aquatic weed control program provided substantial benefits to millions of Louisianians during the 1991/92 fiscal year. Section crews, utilizing boats, airboats, mudboats and roadside spray units, effectively applied herbicide to 20,269 acres of freshwater wetlands infested with water hyacinths. Another 7,607 acres were treated by helicopter for a total of 27,876 acres.

Special Control Projects. Limited applications of specialized herbicides were used to relieve unusual and severe infestations of aquatic weeds in False River, Spanish Lake, Bayou Desiard and other areas. These applications were temporary measures and served to familiarize local residents with safe and effective use of aquatic herbicides.

In June 1990, the Department initiated an herbicide application program in an effort to eradicate hydrilla from Caney Lake, a newly constructed 5,000 acre impoundment in Jackson Parish. Section personnel were involved in treating nearly 400 acres of this exotic plant species utilizing a systemic, EPA approved herbicide. Post-application surveys indicated a control level of approximately 90%. A total of 53 acres were treated during the summer of 1991. On-site field surveys during the spring of 1992 indicated that approximately 500 acres of hydrilla were scattered throughout the reservoir. Based on these findings the herbicide eradication program was cancelled.

Research Programs. Ongoing research projects of the Aquatic Plant Research and Control Section include: evaluation of new herbicides to determine availability and effectiveness for use in aquatic weed control; continued investigations into affects of environmental conditions and water fluctuations on hydrilla, as well as evaluations of chemical, biological and mechanical methods of its control.

Lake Management Project. An important part of the stewardship of Louisiana's wildlife and fisheries resources is skilled and professional management of public lakes. Aquatic vegetation investigations were made by section personnel to determine the status of aquatic weed infestation on 31 lakes. The primary objective was to obtain accurate records of aquatic weed populations necessary for the proper formulation of workable management plans. Species composition and density were determined on nine lakes. As a result of these investigations, management recommendations were made for seven of these lakes, one of which underwent drawdown procedures.

Noxious Plant Monitoring Program. Part of the section's responsibility is the identification and monitoring of noxious, non-native, aquatic plant populations in Louisiana's wetlands. During FY 1991/92, thirty-one lakes were type-mapped to determine and evaluate the encroachment of these plant species.

In cooperation with the U.S. Army Corps of Engineers, a watch is kept on the density, environmental impact and rate of spread of these introductions. A notable example is hydrilla, a submersed aquatic plant discovered in Louisiana in 1973 that is now spreading into many areas with the potential of becoming a more serious pest than the water hyacinth. Another more recent introduction, also potentially quite troublesome, is salvinia. This relative newcomer has made its appearance in several areas of south Louisiana, including the Atchafalaya Spillway and False River, and is being monitored closely.

Technical Assistance Program. Section biologists provide advice and technical assistance to private pond owners and municipalities concerning aquatic vegetation management problems. In addition to offering professional recommendations for establishment of proper management programs, biologists also provide aquatic plant species identification assistance for the public on request.

FISHERIES RESEARCH DIVISION

The Fisheries Research Division is composed of three major components referred to as the Stock Assessment Section, Environmental Monitoring Section and the Artificial Reef Program.

Stock Assessment Section

The Stock Assessment Section was set up to: 1) utilize historical data quickly and efficiently in addressing current problems; 2) employ data from different components of the Office when addressing a single problem; 3) use state-of-the-art modeling in addressing fishery problems.

The section uses age-structured stock assessment methods in addressing the status of finfish stocks, and has developed a unified database.

The section's major responsibility is to conduct scientific assessments of marine and freshwater species of fish and shellfish found in Louisiana waters. Various types of data are required in preparation for scientific analysis. The section, in cooperation with both the Marine Fisheries and Inland Fisheries divisions, is responsible for compiling and maintaining data collected by those divisions, and for obtaining data from other state and federal agencies necessary to perform the aforementioned task. Analyses are also performed with respect to quota monitoring, seasonal openings/closures, standardized reports and general requests for the other fisheries divisions.

Personnel in the section act as state representatives on various state and federal committees dealing with scientific aspects of the concerned fishery.

The following is a brief synopsis of accomplishments for the fiscal year. The section updated the red drum stock assessment, completed an assessment of mullet, *Mugil cephalus*, and prepared an analysis of the effects of size limits on spotted seatrout.

The section, with representatives of other divisions, continued development of an Office of Fisheries database system to standardize data entry and storage for easy access and analysis. Data not collected by the Department, such as the National Marine Fisheries Service recreational survey, were transferred to the Department's mainframe for use in developing management plans

State/Federal Cooperative Fishery Statistics. Since 1983, the Coastal Fisheries Institute (CFI) at Louisiana State University has worked cooperatively with the Department and the NMFS in collecting urgently needed biological and catch/effort data on king mackerel in the western gulf.

This program has since been expanded to include other recreationally and commercially important fishes managed by the federal government such as reef fish and shrimp. Information supplied by CFI over the last eight years has been the only commercial data on king mackerel and red snapper available from the western gulf for use by NMFS and Gulf of Mexico Fishery Management Council statisticians.

The continuing goal of this project is to obtain catch/effort data, sex ratios, ages, and length frequencies of king mackerel, other coastal pelagics like Spanish mackerel and tunas, sharks and reef fish landed by commercial and recreational boats in Louisiana.

In 1990, LDWF took the role as primary collector of Louisiana finfish landings data from NMFS. Monthly reports from wholesale/retail dealers were collected, checked for accuracy and forwarded to NMFS for entry. In 1991, LDWF began directly entering report data. This allows more rapid analysis of data for quota monitoring and stock assessment purposes.

Environmental Monitoring Section

Responsibilities include environmental and fisheries independent data collection and analysis for three major programs: ecological monitoring of the Louisiana Offshore Oil Port (LOOP); the National Marine Fisheries Service funded cooperative Southeast Area Monitoring and Assessment Program (SEAMAP); and monitoring of salinity, water temperature and tide levels from constant recording instruments located across the Louisiana coast. The section plays a major role in contingency planning for response to, and impact assessment from marine oil spills. In addition, section personnel are monitoring environmental impacts of offshore brine disposal from the DOE West Hackberry Strategic Petroleum Reserve site at West Hackberry.

LOOP. Monitoring of LOOP activities to determine impacts was initiated in February, 1978. Sampling procedures have evolved over time to quantify impacts of LOOP activities on various coastal habitats surrounding LOOP facilities. Objectives of the Environmental Monitoring Plan are as follows:
(1) To obtain seasonal environmental and ecological data so that conditions existing during LOOP's operation can be related to historical baseline conditions; (2) to detect any adverse alterations or damage to the environment so that corrective action can be taken as soon as possible; (3) to obtain sufficient data to determine causes of environmental damage or alterations so that responsibility can be properly placed; and (4) to provide information to evaluate long and short-term impacts of the project.

The faunal communities sampled include demersal nekton, macroinfaunal benthos, and zooplankton including ichthyoplankton, postlarval shrimp and commercially important crabs. Chemical parameters of the water are measured. Constant recorder data include rainfall, water temperature, salinity and tide. Sediment samples are analyzed. The regularly scheduled sampling program is augmented by monitoring specific events, including brine disposal.

Because of its participation in environmental monitoring of the LOOP Project, the section has been involved in planning for, response to, and natural resource injury assessment from a marine oil spill. Personnel have participated in oil spill investigations, contingency planning for the LOOP Project, oil spill dispersant use planning and pre-approval, Natural Resource Damage Assessment training, drafting and review of state oil spill legislation, and state contingency planning in cooperation with the Governor's oil spill coordinator.

SEAMAP. SEAMAP engages state and federal agencies in coordinated collection, management and dissemination of fishery independent information. Its encompasses marine and estuarine waters and living marine resources within the U.S. Exclusive Economic Zone. Fishery stocks emphasized are those subject to cooperative state/federal management. The primary goal of SEAMAP is to collect long-term standardized data on the condition of living marine resources and their environment. SEAMAP sponsored activities in Louisiana marine waters are seasonal trawl surveys (March, July, October, December) in conjunction with plankton and environmental sampling.

Coastal Monitoring. The Department began constant recorder monitoring in 1958. Salinity, water temperature and tide level data are now collected from 11 stations located from the Pearl River to Calcasieu Pass. Instruments record data at 20 minute intervals and, once processed, the data are used to support fishery management decisions such as setting opening dates for the spring brown shrimp season. The section participates in this program by maintaining the instruments, servicing them in the field, data translation, data basing, data analysis and report preparation.

Caernarvon Monitoring. The Caernarvon Freshwater Diversion Project was authorized for the purpose of introducing freshwater from the Mississippi River into the marshes of southeast Louisiana. Objectives of the project are: 1) enhancement of emergent marsh vegetation growth; 2) reduction of marsh loss; 3) increase in significant commercial and recreational fisheries productivity; 4) increase in significant commercial and recreational wildlife productivity.

The LDWF, under contract with the Department of Natural Resources, has responsibility to carry out the biological component of the monitoring program for this project. In 1992, Caernarvon began its second year of operation and diverted water for a total of 260 days. The epartment of Wildlife and Fisheries is scheduled to ontinue monitoring of the effects of this freshwater ntroduction on the biology of the area through 1994. esults of this work will be used in determination and peration of additional freshwater diversion structures in oastal Louisiana.

eismic Environmental Monitoring. In 1939, the eismic Section of the Department of Wildlife and Fisher es was created to protect oysters, fish, shrimp, and wildlife rom possible loss or damage due to seismic exploration. he Seismic Section is responsible for permitting geophysi al projects throughout the state. Each individual seismic roject is submitted to the section for review, where it is ompared with Department databases in order to protect ensitive or special resources. In fiscal year 1991-92, a otal of 299 individual projects were evaluated. .

The section is also responsible for supervision of eismic projects wherever they occur. The field staff are ngaged in visiting each project to witness activities and e sure the project is conducted in a safe and environmen ally sound manner.

Louisiana Artificial Reef Program

The Louisiana Artificial Reef Program was stablished in 1986. The program was designed to take dvantage of obsolete oil and gas platforms which were ecognized as providing habitat important to many of Louisiana's coastal fishes. These platforms are required by both federal law and international treaty to be removed one year after production ceases, at great expense to the industry and a loss to Louisiana's fishermen.

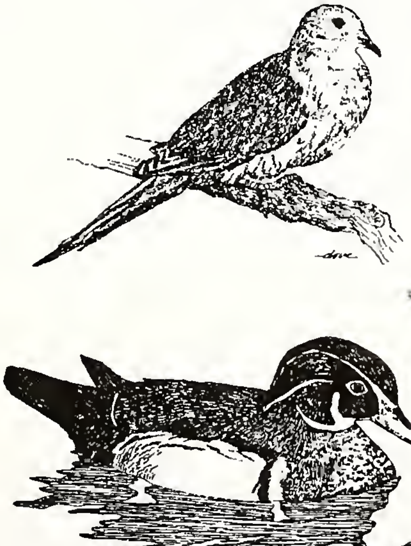
A funding mechanism was developed by which operators participating in the program donate half of the savings realized by converting their structure into an artificial reef, as compared to traditional onshore abandonment. These funds are placed in a trust fund; the program is operated from the interest generated by the fund.

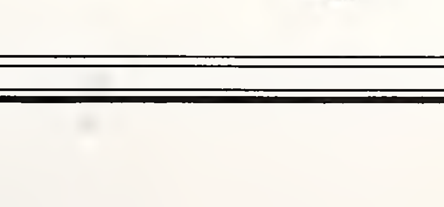
The state assumes liability for the structures. Operational expenses include administration of the program, purchase and maintenance of artificial reef markers, and monitoring of the reef sites to insure permit compliance and document reef performance.

As the interest exceeds operational expenses, other activities such as reef related research and contraction of inshore reefs can be funded.

Since its inception in 1986, 13 different petroleum companies have participated in the program and donated the jackets of 21 structures. In addition to the material, the participating companies also contributed $4.1 million into Louisiana's Artificial Reef Trust Fund.

The state's reef program is currently involved in developing reefs in Louisiana's inshore waters. The majority of these reefs will be low profile reefs composed of shell.





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